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## ORIGINAL ARTICLES.

### THE TREATMENT OF EXOPHTHALMIC GOITER.<sup>1</sup>

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FIVE years ago I wrote a brief paper on the early recognition of exophthalmic goiter and reported a number of cases.<sup>2</sup> Since then other cases have come under my observation, both in my own practice and in that of friends. These I have carefully considered, especially from the standpoint of curability. Most of my original cases are now well, and I shall, in brief, report their present condition and the means that were used to bring about this good result. Others will be referred to as illustrating interesting features.

In looking over the literature of exophthalmic goiter, I notice that there is a growing conviction, which I myself have always felt, that this disorder is a very manageable one. Undoubtedly some cases are not to be made well; certainly a large proportion can be most satisfactorily helped, and many entirely cured. The general measures that I have employed with advantage have chiefly the element of rationality to recommend them. It has been said, and rightly, that those disorders which have recommended for their treatment the largest array of medicines and measures are the ones of which we know least. Certainly a large and contrary lot of remedies are urged for this disorder; some are claimed by their authors to be almost specific; others are backed up by a large array of cases; and yet few, to my mind, are, singly considered, much better than the rest.

In looking over my paper referred to, certain conclusions then formulated seem still to obtain with equal force. The most important measure is the early recognition of the symptoms that in their entirety represent the malady. I am inclined to doubt more strongly than ever that, with early recognition and judicious treatment, the disorder need at any time become so serious in its results as we have been led to believe.

Without discussing the reasons at length, my con-

victions are that exophthalmic goiter is a vasomotor disturbance, and not related to any specific disease of the thyroid gland. It has not been shown to have any connection with the functions of the thyroid as a trophic organ, or at any rate to depend upon either an increase or a diminution of the normal secretions of that gland.<sup>3</sup> It has happened that all of the symptoms of Graves' disease have come on with great suddenness, in consequence of profound emotion, and in persons with, presumably, normal thyroids, and have again disappeared as abruptly. Unless further evidence shall be adduced to the contrary, I am inclined to regard the disorder as a cardio-vascular erethism,<sup>4</sup> or, to use the term coined by my friend Dr. S. Solis-Cohen, as a "vasomotor ataxia."<sup>5</sup>

In this connection certain tropho-neuroses are of the deepest importance therapeutically. The group of trophic and vascular disturbances associated with enlargement of the thyroid gland, including exophthalmic goiter, myxedema, cretinism, and akromegalia, are receiving a good deal of attention, both as to their pathology and as to their treatment, and from this search-light tendency of medical science much is to be hoped. I would be glad to believe that specific results could be hoped for from the absorption of thyroid juices and similar measures, and myself use these in suitable cases. Meanwhile, my present purpose is to relate such measure of success as has come to me, and indicate the lines upon which it has been obtained, holding in reserve the brilliant possibilities referred to.

I am inclined to agree with Raymond and Serieux,<sup>6</sup> who consider exophthalmic goiter a bulbar neurosis, manifesting itself in an exaggeration and permanence of the physiologic phenomena of emotion, placing the emotional state at the foundation of the disease as a psychic anomaly, a derangement of vasomotor centers, coinciding with analogous troubles in other centers of the cerebro-spinal axis. There are to be found in this disorder certain associated psychoses, with evidence of hereditary taint, signs of physical degeneration, mal-development of the facial area in the central cortex, vaulted palates, etc., seen in developmental neuroses.

Of the three features that constitute the classic

<sup>1</sup> Read by title at the meeting of the American Medical Association, June 6, 1893.

<sup>2</sup> Journal Amer. Med. Assoc., April 14, 1888.

<sup>3</sup> Putnam: Trans. Association of American Physicians, 1893.

<sup>4</sup> Dieulafoy: La France Médicale, August 19, 1892.

<sup>5</sup> Times and Register, March 18, 1893.

<sup>6</sup> Revue de Médecine, December, 1892.

symptom-group of Graves' disease, it is now admittedly possible for any two to be absent, or at least not constantly recognizable. It is common to find the thyroid enlargement absent; next most common to find exophthalmos not present; and possible, though rare, to find the circulatory disturbance to be practically wanting, in the presence of the ocular and thyroid symptoms.

The most important phenomena of the disease are connected with disturbed circulation. One or another of the more picturesque symptoms may be temporarily absent; not seldom the thyroid irregularly enlarges and collapses; the exophthalmos also comes and goes; but in my experience there is seldom an absence of irregular or easily disturbed vascular conditions. In two cases I have seen the more distressing symptoms quite disappear, but either slight exophthalmos or moderate thyroid enlargement, or both, remained. I have had two ladies under observation for seven and ten years respectively, who are practically well, and in whom the exophthalmos persists; and another who has considered herself well for over a year, but whose thyroid is still noticeably large. The thyroid enlargement seems to me to be the first symptom to definitely disappear, although in the case referred to it has persisted after the subsidence of the other symptoms.

The next most common feature is the relaxed state of the sweat-glands. This seems to be a uniform feature, and remains much the same in most cases. I have seen cases of slight vasomotor ataxia in which flushes came and went; but ordinarily there is a pallid, oleaginous appearance, which persists, giving the skin a macerated look, with rarely any offensive odor. Urination is not commonly disturbed; hemoglobinuria is rarely seen; purpuric areas occasionally appear; and slight hemoptysis and hematemesis may take place; nor is it common to see edema. In one particularly severe case, which terminated in wild insanity, I have noted persistent edema; when it occurs it only appears intermittently.

The temperature fluctuates considerably. In first interviews, which are attended with a certain element of nervous emotion, it is quite common to find the temperature above 100° F. In the same individual a short time afterward, the temperature taken in the mouth may be subnormal. In such cases as I put to bed for systematic rest, a rise of temperature is almost always noted for the first three or four days, followed by a steady falling until the normal is passed, the temperature remaining subnormal for three or four days, and then creeping back to the normal, and remaining at this level, or a little below, for several weeks.

The rapid variation in arterial tension accounts for the intermittent albuminuria, the mild polyuria, and other changes in the renal secretion, as well as for

the occasional blood-spitting, together with disturbances of special sense, as roaring in the ears, headache, fluttering of the heart, altered heart-sounds, dyspnea, etc. The tremor that Gowers refers to I have not often seen, except in the form of occasional tremulousness of the lip or tongue, and then mostly under excitement; but a more or less constant vibratile quality in the voice is always suspicious. The sensory disorders are not many, headache being the chief, as in one of the cases here related, in which this persisted throughout life, almost daily, worse in the morning and in certain attitudes, as stooping down, and sometimes suddenly becoming so severe as to cause vomiting.

The Von Graefe lid-symptom seems to be regarded as of less significance among clinicians as time goes on. Sharkey<sup>1</sup> has examined 613 patients of all kinds, and among them found 12 that presented this symptom. He states that in people of good health it can be frequently induced by staring fixedly. It constantly fails to be present in Graves' disease, and its diagnostic significance is small. The electric resistance of the body, too, has failed of its early promise as a useful indication, as hopefully outlined by Norris Wolfenden. It had come to mean little to me long ago, and observers generally now regard it as of small account. H. W. Carduff<sup>2</sup> finds the electric resistance diminished in 15 of 20 cases of exophthalmic goiter, and remarks that the phenomenon is worthless as a diagnostic sign, as it varies with the moisture of the skin. When we consider that the moisture of the skin is almost constantly marked in well-defined instances of exophthalmic goiter, the only wonder is that much significance was ever attached to an alteration in the electric resistance as a symptom.

The order in which the characteristic symptoms appear is not always easy to determine. I am inclined to agree with Jaccoud,<sup>3</sup> who puts it as follows: palpitation, dilatation of arteries, enlargement of thyroid, exophthalmos. A point that seems to me to be useful, though rather a result of the characteristic changes that take place, is the diminished respiratory range or chest-expansion pointed out by Fiske-Bryson.<sup>4</sup> I had noticed that the respiratory movements of sufferers from exophthalmic goiter were almost as much disturbed as the cardio-vascular mechanism; and, purely from the therapeutic standpoint, had been accustomed to urge upon patients the use of forced inspiration. This seems to me a very tranquilizing measure, and one that is a proper part of systematic hygienic measures. In the more recent cases under my observation this limited ex-

<sup>1</sup> British Medical Journal, October 25, 1890.

<sup>2</sup> London Lancet, February 28, 1892.

<sup>3</sup> New York Medical Journal, February 22, 1891.

<sup>4</sup> Ibid., December 14, 1889.

pansion of the chest has been observed. Bronzing of the skin is not common; uniform changes, as pointed out in my original paper, such as a greasy, macerated-looking skin, are much more likely to be present, possibly as a result of the paretic condition of the surface-vessels. There seems also to be an excessive secretion of skin-oil, recognizable by the touch as well as the appearance.

Stellwag's sign—retraction of the upper eyelid—I have rarely seen.

Charcot has somewhere directed attention to the importance of elevation of the temperature as a diagnostic point. In my experience, such an elevation only persists when the patient is upon his feet and moving about. As I have pointed out elsewhere, when such a one is put to bed, the temperature subsides after a few days and becomes subnormal.

Mackenzie<sup>1</sup> makes the statement that when the clinical picture of exophthalmic goiter is incomplete the disease is rarely fatal; but when the picture is well-marked, the disease is dangerous to life. There are times when death occurs apparently from an overwhelming disturbance of circulatory balance—in short, a death from the disease itself; but it rarely seems to be due to trophic changes referable to the pathology of the thyroid gland.

My conviction is that exophthalmic goiter is much less rare than is generally believed, and that it is also far more amenable to treatment than is usually taught. Unless there coexists serious structural disease, excellent results, in more instances a practical cure, may be looked for if the treatment be persistently and systematically pursued. The results in my own cases have taught me to give a favorable prognosis; and if specific medication with thyroid juices and thyroid removal prove of value, these may add much greater possibilities.

It has been my experience to see several cases not clearly definable as Graves' disease, wherein the symptoms of cardio-vascular erethism were most distressing. These were often superadded to organic disorders and generally complicated with hysteria. The patients responded most promptly to tranquilizing agents directed to the loss of vasomotor balance and, in so far as this feature went, were readily relieved. It is reasonable to assume that from such cases as these, full-blown instances of exophthalmic goiter may and sometimes do arise.

A very important point clinically is that too often the significance of these symptoms is not recognized and treated, as well as that the difficulties in inducing such patients to persist in systematic measures for the long periods required are very great.

The treatment of exophthalmic goiter is modified in various hands by the conception of the physician

as to the nature of the condition, whether it be a blood, cardiac, neurotic, or thyroid disorder. It must be also recognized that a person suffering from this trouble is always on a lowered plane of health. The degree of this may be much more serious than would appear on the surface; certainly a modification of the ordinary activities of the patient must be outlined, and under most circumstances very little laborious work allowed. When it is possible, absolute rest in bed is indicated for a time. A diet of the most uniform and tranquilizing kind, such as milk, the regular milk-diet such as Karel's outlined, is usually of use to bring the disturbed circulation as soon as possible on an even plane. This may be amplified by a judiciously selected diet in proportion to the depression of nutrition that may exist.

The diathetic element that may be back of the disorder needs careful consideration; in some of my cases it was found to be lithemia. Along with attention to the diet there must be large care in the treatment of the skin. This may take the form of salt sponge-baths, given by another while the patient is in bed, and finally, as strength improves, taken by himself; a tablespoonful of salt in a basin of water regularly applied on waking in the morning, after some little fluid nourishment; this to be followed by a brisk, rough rub from head to heel; afterward breakfast. When the skin is greatly at fault, this may be repeated before bedtime with advantage, or to supplement the skin-stimulation the dry salt towel may be used more or less often; again, an aromatic vinegar on a damp sponge may be applied to the more leaky parts, as the soles of the feet and the palms of the hands, about the small of the back. This aromatic vinegar can easily be made in any household by taking a pint of good white wine-vinegar and adding a dozen or more of cloves, allspice, and whole peppers, and allowing it to steep. A tablespoonful or more of this applied on a moistened sponge is very comforting and relieves the over-damp skin wonderfully. In giving massage it may be important to use drying powders, such as talc or lycopodium, until the patient can endure the manipulations. A measure recommended by some, notably by J. L. Corning, for giving tone to the skin is hot bathing followed by cold ablution, but for my part I have rarely seen the need of it. During conditions of great restlessness, no doubt this would aid in securing sleep. The hot, salt sea-water baths might be very useful to this end, and I have, indeed, ordered them temporarily in a few instances, with advantage, but my dependence is rather upon the cool salt water, the aromatic vinegar, and systematic surface-rubbing, as well as upon such internal remedies as hyoscin hydrobromate in sufficient doses.

Wool or silk should always be worn next the

<sup>1</sup> London Lancet, September 20, 1891.



skin, inasmuch as the cause of the disorder is often closely related to surface-chill. The frequent changing of the underwear, too, is a minor point of large significance. It is bad enough for the surface-exudations to remain uneliminated, but it is worse to keep them locked in by the clothing. If skin-leakage be extreme, it is important to change the underwear several times a day, employing, if possible, a brisk dry rub each time.

For the over-acting, tumultuous heart, there is nothing so certain to steady its beat and lower its frequency, and generally to tranquillize the whole cardio-vascular mechanism, as ice applied to the precordium. Care is needed, of course, lest some damage be caused by this very powerful agent. Ice-bags over the spinal region, too, exercise some value. In conditions of profound tumult of the heart this is valuable, and many times is useful as a more or less routine measure. Galvanization of the great sympathetic and faradization of the cardiac region are highly prized by a number of observers, but I have never seen them do the wonderful things that Charcot, Rockwold, and Lewandowski have claimed for them, although I think I have seen them do distinct good in a few cases. I have given faithful trial to the carbazotate of ammonium, as recommended by Hammond<sup>1</sup> and by Boaz,<sup>2</sup> in three cases, with no noticeable result, while the offensiveness of the drug is beyond description.

Many writers say that digitalis will not modify the heart's action. Alone probably not, and yet I have had very good results from digitalis. Strophanthus seems to do better, although physiologically one might not expect it. Spartein sulfate may be even better yet. Many different kinds of vascular tonics are useful in this disorder, and it cannot always be predicated which will do best. The one drug that has served me best of all, and to which I look with great confidence in modifying the discomforts and dangers of this disorder, is hyoscin hydrobromate. This serves to tranquillize the overwrought emotions, puts the economy into a reposeful state, dries the surface over-secretions, oftentimes without causing uncomfortable drying of the throat, relieves the feeling of chilliness by checking surface-moisture, exercises a beneficial effect upon the renal vaso-constrictors, and in many ways may be regarded as a most useful ally. In one case here reported this was the chief agent employed in subduing a headache that had existed for half a lifetime and for which much medication had been endured; to be sure, galvanization of the thyroid was also used, and some general measures directed to the patient's nutrition and relief from laborious occupations enforced. In the case of this poor woman, who was

compelled to do a large amount of daily work, to prepare her own food and her husband's, and to sustain and carry on many responsibilities, prompt recovery took place from a condition that had persisted for many long and weary years. I will not say too much about the value of hyoscin hydrobromate, because the notes of my cases show this well enough. Dr. S. Solis-Cohen gets excellent results from picrotoxin.<sup>1</sup>

Certain ones, as Kümmell,<sup>2</sup> have removed the thyroid in cases of exophthalmic goiter, leaving part of the left lobe, with favorable results. It does not seem to me that all of the good attributed to this operation lies in the removal of the thyroid, much of it possibly being the enforced rest and regulation of living. Nevertheless, I should welcome any specific agency, such as the surgical removal of an offending part, or the use of thyroid juices internally, if we could by this means radically negate the effects of errant thyroid activities.

Chevalier<sup>3</sup> maintains that the tachycardia is due to an affection of the nucleus of the vagus, the struma and exophthalmos being dependent upon the tachycardia, and declares the cause of the disease to be an intoxication of the nervous system through by-products of the thyroid. Many tonics might be considered in this connection. Iron is frequently indicated, especially the more digestible forms, as the carbonate, Flint's chalybeate pill, the vegetable salts, the malate, and the old-fashioned and reliable lactate. However, it is needless to go over a list of tonics suited to varying conditions and cases. Nutrient tonics are the best; good diet, very carefully adjusted to the needs of the patient. This at first may, with advantage, consist largely of milk, then enlarged by graduated increments, as the case demands, with aids to digestion, and then malt and cod-liver oil. The mechanical tonics, massage and faradic electricity, are of great value. The entire environment of the individual should be carefully reviewed, emotional disturbances rigidly

<sup>1</sup> Extract from letter of Dr. S. Solis-Cohen: "Concerning my use of picrotoxin in cases of Graves' disease and other forms of vasomotor ataxia, I would remind you that I learned the practice from Prof. Bartholow, having seen the good results in a case of exophthalmic goiter, attended with purpura, treated at the Jefferson Medical College Hospital during my service as Chief Clinical Assistant. I give from one-eightieth grain to one-twentieth grain thrice daily, the indications being found principally in the vascular phenomena of the cutaneous and mucous surfaces and glands; that is to say, sweating, profuse discharge of saliva, coryza, and tendency to heat and redness of the skin, suggest the use of this drug. In cases showing constriction rather than relaxation of vessels, it is less applicable. I have sometimes found the combination of ergot and picrotoxin better than picrotoxin alone; in other cases barium chlorid (one-eighth grain) has been combined with it. . . . At the same time I have considerable confidence in picrotoxin as a tonic to the toxic power, or center, in these cases of vasomotor disorder."

<sup>2</sup> Deutsche med. Wochenschr., May 15, 1891.

<sup>3</sup> Neurolog. Centralbl., September, 1892.

<sup>1</sup> New York Medical Journal, January 25, 1891.

<sup>2</sup> Western Medical and Surgical Reporter, September, 1891.



excluded, and, when possible, physical and mental strains removed. The isolations of a complete rest-treatment probably offer the very best opportunities of all; and finally, graduated activities in the form of Swedish exercises, systematized outings, and restful life in a dull country-place. The correction of refractive errors of the eye is always of the greatest value.

(To be concluded.)

**EFFECT OF CARBON DIOXID, CARBONIC OXID, SULPHURETED HYDROGEN, WATER-GAS AND COAL-GAS ON ANIMAL LIFE.<sup>1</sup>**

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As the health of every individual is dependent upon the purity of the atmosphere, a knowledge of the effect on animal life of impurities in the air is of the highest importance to the community at large, but of special importance to those who work in coal, silver, lead, copper, or gold mines, or at iron furnaces, coke ovens, etc. In such places impurities often exist, such as

	S. D.
CO <sub>2</sub> —"Choke-damp," or carbon dioxid . . .	1.529
CO—"White damp," or carbonic oxid . . .	0.9678
H <sub>2</sub> S—Sulphureted hydrogen, or hydrogen sulphid .	0.1912

The statistics compiled by me from the indices of the library of the College of Physicians, Philadelphia, one of the most complete institutions in the world, show that 90 per cent. of the total scientific experiments on the effects of noxious gases on animal life have been made by the Germans and the French, and for the last decade scarcely any experiments have been made by scientists of any nationality, the results obtained by our forefathers being accepted with a credulity seldom encountered in other branches of science. In addition to this, the poverty of information in the standard references on this subject is so great that were any particular knowledge required, it would be necessary to make new experiments. With these facts before me, in grouping the results obtained in experiments with carbon dioxid, carbonic oxid, and sulphureted hydrogen on animal life, the medical fraternity will at least have a condensation of experiments for reference from many authorities, combined with the results of my own experiments. I claim that my experiments are absolutely accurate, as the means employed for mixing the different atmospheres (the Shaw gas-tester) is acknowledged to be as nearly perfect as human agency can make anything, and has been awarded the Elliott Cresson and the Scott Legacy medals for accuracy—the

<sup>1</sup> A lecture delivered before the students and Faculty of the Philadelphia College of Pharmacy, November 21, 1893.

highest awards in the gift of the Franklin Institute. This tester is to gases what weights and scales are to solids.

It is not my intention to go into the constituents of the gases named, there being no necessity for my doing so in this paper. I have simply one object in view: to describe, as the result of recent experiments, the effect produced by them on animal life. The Shaw gas-tester, which I used for mixing my gases in the centesimal proportions desired, is an apparatus simple, convenient, and accurate, consisting of two pumps with pistons attached to a graduated arm, so that one cylinder can be set to pump 10 per cent. of gas and the other 90 per cent. of air, or *vice versa*, or any per cent. to the lowest fraction. It is the only instrument in the world capable of mixing gases accurately, rapidly, and continuously in any per cent. desired, the product of the two cylinders being forced through an injector or mixer before delivery.

The animal under treatment is placed in a bell-shaped glass cylinder sixteen inches high, of four inches diameter at the neck and eight inches at the base. The cylinder is placed horizontally on the table, with the neck toward the operator, and is connected with the instrument at the neck by means of a rubber tube. The animal rests on all fours, facing the operator, with its nose near the aperture through which the gases enter the cylinder from the instrument or mixer.

The end of the bell-shaped glass cylinder is entirely open to the air, so that the mixture of gas and air is discharged and replaced every four seconds by each stroke of the pump, always maintaining a constant mixture, preventing stratification or contamination through the exhalations of the animal. The cylinder, being of glass and perfectly transparent, enables the operator to observe every change in the condition of the animal.

The difference in results obtained by the various authorities has caused me to make the following experiments to satisfy myself, an accurate knowledge on this subject being necessary to the pursuit of my profession, and I am well aware of the great difficulties experienced by my predecessors in making accurate mixtures of gases, owing to the crude appliances for this purpose at their command.

As a prelude to my experiments I will give the results obtained with carbon dioxid by scientists whom we are accustomed to quote:

CARBON DIOXID.	Per cent.
J. H. Merrivale says: It extinguishes lights and is fatal to animal life.	
J. J. Atkinson says: Dangerous to life	8
Lights extinguished . . . . .	10
Fairley's <i>Catechism</i> : Dangerous to life . . . . .	3
Will cause death quickly . . . . .	10
Light will burn in . . . . .	10 to 20

Sir H. Roscoe's <i>Chemistry</i> : Will not support combustion of candle	Per cent.
Dr. A. Smith : Lights extinguished	3 to 6
Would suffocate	2
	4

Watts' *Dictionary of Chemistry* says: "Animals immersed in it soon die, not only from want of oxygen, but in consequence of a direct poisonous action, violent spasms being sometimes produced; sometimes complete atony of the cerebral faculties."

The *Encyclopædia Britannica*, vol. v, p. 87, says: "Will not burn, neither does it support combustion."

Dr. Karl Friedlander, of Berlin, in experiments on animal life states that "62.8 per cent. killed a rabbit in twenty-seven minutes; 65 per cent. killed a rabbit in forty-five minutes," the higher per cent. in this instance taking longer to kill the rabbit than the lower per cent., showing a wide variation in his tests, which I can only account for by the imperfect appliances at his command for placing definite quantities of gas in the atmosphere, and maintaining a constant mixture of definite proportions. Rabbits, like human beings, have their ailments, and I have found in the course of my experiments that disease, in the shape of a fatty accumulation about the heart, disqualifies the animal entirely for tests of this nature, death resulting in one-tenth of the time necessary to produce the same result in a perfectly healthy animal; but in the foregoing instance the difference in time of immersion in such a high per cent. is not great enough for me to ascribe the difference in effect to any organic disease, but rather to the imperfect mixing of the gases.

In all of my experiments I have found that the smaller the animal the sooner it succumbed to poisonous gases. My first experiments were made with small birds; then I tried mice, after which I bestowed my attention on guinea-pigs, finally selecting the rabbit upon which to conduct the experiments herewith presented.

#### EXPERIMENTS WITH CARBON DIOXID.

EXPERIMENT NO. 1. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 10 per cent. of  $\text{CO}_2$  and 90 per cent. of air. After one hour and seven minutes the rabbit gave no indication whatever of being affected, so I released it and allowed it to run with several others of its species, the effect of its treatment, contrary to expectation, being great exhilaration instead of stupefaction.

*Result.* 10 per cent. of  $\text{CO}_2$  and 90 per cent. of air; one hour and seven minutes' inhalation—exhilaration.

No. 2. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 25 per cent. of  $\text{CO}_2$  and 75 per cent. of air for one hour, at the end of which time the animal showed no indication whatever of being affected, and when released and placed with others exhibited as much liveliness as they.

*Result.* 25 per cent. of  $\text{CO}_2$  and 75 per cent. of air; one hour's inhalation—unaffected.

No. 3. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 50 per cent. of  $\text{CO}_2$  and 50 per cent. of air. At the end of two minutes the rabbit showed signs of being affected; at the end of three minutes it commenced to gasp regularly every two seconds; at the end of six minutes the gasps were three seconds apart; ten minutes, the gasps were four seconds; twelve minutes, the gasps were six seconds; fourteen minutes, the gasps were eight seconds; fifteen minutes, the gasps were nine seconds; sixteen minutes, the gasps were ten seconds; seventeen minutes, death ensued.

*Result.* 50 per cent. of  $\text{CO}_2$  and 50 per cent. of air; seventeen minutes' inhalation—death.

No. 4. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 75 per cent. of  $\text{CO}_2$  and 25 per cent. of air. At the end of two minutes the rabbit commenced to pant rapidly; three minutes, it became stupefied and gasped every two seconds; five minutes, the gasps were three seconds apart; seven minutes, the gasps were five seconds; eight minutes, the gasps were six seconds; nine minutes, the gasps were ten seconds; ten minutes, death ensued.

*Result.* 75 per cent. of  $\text{CO}_2$  and 25 per cent. of air; ten minutes' inhalation—death.

No. 5. I placed a mouse in a glass cylinder and pumped in an atmosphere of pure  $\text{CO}_2$ ; death was instantaneous.

*Result.* Pure  $\text{CO}_2$ ; death instantaneous.

No. 6. I placed a mouse in a glass cylinder and pumped in an atmosphere of 25 per cent. of  $\text{CO}_2$  and 75 per cent. of air. At the end of three minutes the mouse seemed slightly affected, but kept moving around the cylinder—in this test held vertically. At the end of ten minutes the conditions were unchanged, and I displaced the atmosphere of 25 per cent.  $\text{CO}_2$  with pure air. The mouse revived instantaneously on the first inhalation.

*Result.* 25 per cent. of  $\text{CO}_2$  and 75 per cent. of air; ten minutes' inhalation; slightly affected, but recovered instantaneously in the fresh air.

No. 7. I placed a mouse in a glass cylinder and pumped in an atmosphere of 50 per cent. of  $\text{CO}_2$  and 50 per cent. of air. At the end of ten seconds the mouse showed great exhilaration; twenty seconds, its activity was greatly reduced; thirty seconds, it became stupefied; thirty-five seconds, gave short gasps; forty-five seconds, the gasps were long and apparently painful; fifty-five seconds, death occurred.

*Result.* 50 per cent. of  $\text{CO}_2$  and 50 per cent. of air; fifty-five seconds' inhalation—death.

Experiments 5, 6 and 7, are only given here to illustrate the fact that the smaller the animal the less the power of resistance to  $\text{CO}_2$ .

#### EXPERIMENTS WITH CARBONIC OXID.

The results obtained by scientists whom we are accustomed to quote, on the effect of carbonic oxid on animal life, are first epitomized.

H. Letheby, M.B., M.A., Ph.D., etc. late Professor of Chemistry and Toxicology in the Medical College of the London Hospital, says that 0.5 of 1 per cent. of CO killed small birds in three minutes; 1 per cent. in half the time; 2 per cent. renders guinea-pigs insensible in two minutes. In all cases the effects were the same. The animals showed no signs of pain; they fell insensible and either died at once with a slight flutter, hardly amounting to a convulsion, or gradually slept away as if in profound slumber. The post-mortem examination showed the blood to be a little more deeply red than usual.

Prof. A. R. Leeds says: "The operation of pure CO is so immediate as to prevent the lungs throwing off a single charge received."

Watts' *Dictionary of Chemistry* says: "It is a very poisonous gas, acting chiefly on the nervous system, causing giddiness when inhaled, sometimes acute pain in various parts of the body, and after a while complete asphyxia."

Buck, on *Hygiene and Public Health* says: "It is not so immediately fatal as carbonic acid gas."

The *Encyclopædia Britannica*, vol. v, p. 87, says: "It is an extremely poisonous gas, being capable of displacing the oxygen in the blood, owing to a compound with the hemoglobin with which the oxygen is ordinarily combined."

The *American Encyclopedia*, vol. iii, p. 775, says: "It is more irrespirable and poisonous than carbon dioxide. Its inhalation from furnaces sometimes causes immediate asphyxia to the workmen."

I will now submit the results of my own experiments on the effect of carbonic oxid on animal life, but have to omit several important tests owing to the carelessness of a servant in destroying my notes.

No. 1. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 2 per cent. of CO, and 98 per cent. of air. At the end of ten minutes the posterior extremity of the rabbit became paralyzed; at the end of eighteen minutes the fore-legs became paralyzed, and at the end of twenty minutes the rabbit became semi-comatose; at the end of forty-five minutes its condition had not altered; on being placed in the fresh air it revived sufficiently to maintain its equilibrium.

*Result.* 2 per cent. of CO and 98 per cent. of air; revived in fresh air after forty-five minutes' inhalation of the gas.

No. 2. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 2.5 per cent. of CO and 97.5 per cent. of air. At the end of five minutes the rabbit became semi-comatose, but on being placed in the pure air, it recovered almost immediately.

*Result.* 2.5 per cent. of CO, and 97.5 per cent. of air; revived in fresh air after inhalation of the gas five minutes.

No. 3. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 4 per cent. of CO,

and 96 per cent. of air. Death resulted in four and one-half minutes.

*Result.* 4 per cent. of CO and 96 per cent. of air; four and one-half minutes' inhalation; death.

No. 4. I placed a mouse in a glass cylinder and pumped in an atmosphere of 0.2 of 1 per cent. of CO and 99.8 per cent. of air. At the end of six minutes the mouse showed no signs whatever of being affected.

No. 5. I then increased the atmosphere to 0.5 of one per cent. of CO and 99.5 per cent. of air. At the end of five minutes the mouse showed no signs whatever of being affected.

No. 3. I now increased the atmosphere to 1 per cent. of CO and 99 per cent. of air. At the end of thirty minutes, the mouse showed no signs of being affected. I then gave it fresh air for one minute, and increased the atmosphere to 2 per cent. of CO, and the mouse died in ten minutes with a total relaxation of all the muscles.

*Result.* 2 per cent. of CO and 98 per cent. of air; ten minutes' inhalation; death.

No. 7. I placed a mouse in an atmosphere of 2.5 per cent. of CO and 97.5 per cent. of air, and the mouse died in five minutes.

*Result.* 2.5 per cent. of CO and 97.5 per cent. of air; five minutes' inhalation; death.

No. 8. I placed a mouse in an atmosphere of 10 per cent. of CO and 90 per cent. of air, death resulting in three minutes.

*Result.* 10 per cent. of CO, and 90 per cent. of air; three minutes' inhalation, death.

In the absence of the missing tests, I have included experiments Nos. 4, 5, 6, 7, and 8, simply to illustrate the fact that the smaller the animal, the less the power of resistance to CO.

#### SULPHURETED HYDROGEN.

I note again the results obtained by scientific authorities whom we are accustomed to quote, on the effect of sulphureted hydrogen on animal life.

Watts' *Dictionary of Chemistry*, p. 203, says: "An atmosphere of one-tenth of 1 per cent. of this gas proves fatal to lower animals."

*Public Health Reports and Papers*, vol. iii, p. 75, 76, says: "It is poisonous, and its action on arterial blood is a common lecture-table experiment."

The *Encyclopædia Britannica*, article Chemistry, vol. v, p. 500, says: "It cannot be breathed with impunity, frequently giving rise to nausea and vertigo, even when much diluted."

The *American Encyclopedia*, vol. ix, p. 130, says: "Thenard found that a small bird would die in air containing fifteen one-hundredths of 1 per cent. and a horse in air that contained one-quarter of 1 per cent."

The results of my experiments on the effect of  $H_2S$  on animal life are as follows:

No. 1. a. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 1 per cent. of  $H_2S$  and 99 per cent. of air.



*b.* I placed another rabbit in another glass cylinder and pumped in an atmosphere of 1 per cent. of  $H_2S$ , and 99 per cent of air, simultaneously with No. 1, using two Shaw gas-testers as mixers for the operation, both connected with the same bag of  $H_2S$ . Death occurred simultaneously in cylinders Nos. 1 and 2, at the end of one minute, preceded by violent convulsions which lasted about ten seconds.

*Result.* 1 per cent. of  $H_2S$  and 99 per cent. of air; one minute's inhalation; death.

No. 2. *a.* I placed a rabbit in a glass cylinder No. 1, and pumped an atmosphere of 0.5 of 1 per cent. of  $H_2S$  and 99.5 per cent of air.

*b.* I placed another rabbit in a glass cylinder No. 2, and pumped in an atmosphere of 0.5 of 1 per cent of  $H_2S$  and 99.5 per cent. of air simultaneously with No. 1, using two Shaw gas-testers as mixers for the operation, both connected with the same bag of  $H_2S$ . Death occurred simultaneously in cylinders 1 and 2 at the end of three minutes, preceded by violent convulsions which lasted about fifteen seconds.

*Result.* 0.5 of 1 per cent. of  $H_2S$  and 99.5 per cent. of air; three minutes' inhalation; death.

No. 3. *a.* I placed a rabbit in glass cylinder No. 1 and pumped in an atmosphere of 0.2 of 1 per cent. of  $H_2S$  and 99.8 per cent. of air.

*b.* I placed another rabbit in a glass cylinder No. 2, and pumped in an atmosphere of 0.2 of 1 per cent. of  $H_2S$  and 99.8 per cent. of air, simultaneously with No. 1, using two Shaw gas-testers as mixers for the operation, both connected with the same bag of  $H_2S$ ; death resulted simultaneously in cylinders Nos. 1 and 2 at the end of ten minutes.

*Result.* 0.2 of 1 per cent. of  $H_2S$  and 99.8 per cent. of air; ten minutes' inhalation; death.

No. 4. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 0.1 of 1 per cent. of  $H_2S$ , or the 0.001 part, and 99.9 per cent. of air; death resulted in thirty-seven minutes.

*Result.* 0.1 of 1 per cent.  $H_2S$ , or the 0.001 part, and 99.9 per cent. of air; thirty-seven minutes' inhalation; death.

NOTE.—In all of the foregoing tests the rabbits were seized with convulsions from ten to fifteen seconds after immersion in the poisonous atmosphere, which lasted on an average about twelve seconds.

No. 5. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 0.025 of 1 per cent. of  $H_2S$  and 99.975 per cent. of air. At the end of two hours the rabbit showed no signs whatever of being affected, so I released it.

*Result.* 0.025 of 1 per cent. of  $H_2S$  and 99.975 of air; two hours' inhalation; unaffected.

#### EFFECT OF ILLUMINATING OR COAL AND WATER GAS ON ANIMAL LIFE.

The frequent occurrence of accidental deaths from illuminating gas has caused me to make a series of experiments on this subject, with a view to determining just how much risk we run in having a small

escape of gas in our bed-rooms, for instance, and the results obtained ought to act as a warning to all who are in any way careless in turning off the stop-cocks before retiring, or who carelessly turn the gas low near a draught, and find it blown out the next morning and the room filled with gas.

No. 1. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 75 per cent. of illuminating gas (water and coal gas) and 25 per cent. of air. The rabbit was immediately seized with violent convulsions and death ensued in two minutes.

*Result.* 75 per cent. of illuminating gas (water and coal gas) and 25 per cent. of air; two minutes' inhalation; death.

No. 2. I placed a rabbit in a glass cylinder and pumped in 25 per cent. of illuminating gas (water and coal gas) and 75 per cent. of air; on the third inhalation the rabbit was seized with violent convulsions and urinated freely; at the end of one minute the convulsions ceased, and at the end of four minutes death ensued.

*Result.* 25 per cent. of illuminating gas (water and coal gas) and 75 per cent. of air; four minutes' inhalation; death.

No. 3. I placed a rabbit in a glass cylinder and pumped in 15 per cent. of illuminating gas (water and coal gas) and 85 per cent. of air; without any struggling it sank into a comatose state; at the end of three minutes it struggled feebly; at the end of four minutes urinated, and at the end of six minutes died.

*Result.* 15 per cent. of illuminating gas (water and coal gas) and 85 per cent. of air; six minutes' inhalation; death.

No. 4. I placed a rabbit in a glass cylinder and pumped in 10 per cent. of illuminating gas (water and coal gas) and 90 per cent. of air; at the end of thirteen minutes the rabbit was seized with a convulsion and died in five seconds.

*Result.* 10 per cent. of illuminating gas (water and coal gas) and 90 per cent. of air; thirteen minutes' inhalation; death.

No. 5. I placed a rabbit in a glass cylinder and pumped in an atmosphere of 5 per cent. of illuminating gas (water and coal gas) and 95 per cent. of air; at the end of ten minutes the rabbit was seized with severe convulsions, which lasted twenty seconds; at the end of twenty minutes it commenced to gasp, and at the end of thirty minutes death ensued.

*Result.* 5 per cent. of illuminating gas (water and coal gas) and 95 per cent. of air; thirty minutes' inhalation; death.

I did not analyze the illuminating gas for its constituents, but the gas used was Philadelphia City gas, and I believe that it contains about 30 per cent. of CO.

I have other experiments on hand on  $CH_4$ , carbureted hydrogen, or fire-damp; also on the effect of carbon dioxide, or choke-damp, on lights, the results of which it will afford me pleasure to make known in my next paper.

HEALTH-RESORTS OF THE WEST AND SOUTHWEST.<sup>1</sup>

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So much has been said and written of Colorado, New Mexico, Texas, Arizona, and Southern California as places of residence for invalids, that it is not now a pleasant task to add to this too abundant literature; and if it were not for the fact that a visit to the chief points of resort in those States had shown me the fallacy of many of the opinions of my coworkers in the East, this paper would be unnecessary.

The opportunity to observe, compare, and examine into the respective merits of these localities from an impartial standpoint is not given to many active physicians, and the circumstances that have made it necessary for me to spend nearly a year among these resorts should be turned to account.

Too often the climatologist in writing of a certain place becomes an advocate and, perhaps unconsciously, paints a picture that patients find too highly colored, and reports go back to the medical adviser in the East that do not conform to his preconceived notions of what the conditions should be. This is unfortunate, and ultimately injures both the place and the advocate. The plain truth would be better for all.

To start with, absolute perfection of climatic conditions is not to be had anywhere. In the second place it must be borne in mind that tables of mean temperature and relative humidity are statistical records that may be juggled and made to show almost anything. Then again, there are dozens of other things that bear on the welfare and comfort of the health-seeker, and they should all be considered.

The belt of high table-land (a part of the summit plateau) extending along the eastern range of the Rocky Mountains, and in which Cheyenne, Denver, Colorado Springs, and Manitou may be found at the north, and Los Vegas, Trinidad, and Santa Fé farther south, is a favorite place for the assignment of cases of pulmonary tuberculosis.

The altitude varies from about five thousand feet to something over seven thousand feet. The air is invigorating, even stimulating. There are few days on which the sun does not shine, and the dryness is all that the greatest advocate of a dry climate could ask. During the summer months there is a moderate rainfall, but it comes in showers lasting a few hours only, and is followed by sunshine and blue sky. Gray and clouded skies, and day after day of rain such as the Atlantic seaboard is subject to, are unknown; and it is the proud boast of the people of

this plateau that they have about three hundred days of sunshine in a year.

The advantages of this territory are then—the altitude, dryness, abundance of sunshine, the peculiarly stimulating and invigorating qualities of the atmosphere, and, I would add, the purifying effects of the occasional high winds, which are so unpleasant while they last and which are so often cited as a great objection.

Other features that present themselves for consideration are the extremes of temperature between day and night and between one day and the next (winter or summer); the dust-storms or sand-storms; the pall of smoke that is inseparably connected with all large towns or cities where there are railroads or factories (for none but bituminous coal is used anywhere in the region considered).

Denver is a very smoky city and in the winter season sends a trail of black clouds for miles out over the prairie. Even Colorado Springs of a winter's morning is overhung and enveloped in its own smoke-product, and the view of it from the plains is far from ideal. I do not desire to convey the impression that these cities are dark and dingy, as are Pittsburg and Chicago—the free circulation of air would prevent that even if the smoke were much thicker. I am speaking of them as health-resorts, and of this condition as existing to an undesirable degree.

Colorado has an admirable winter climate, but from November 1st to March 1st it is not a tropical or semi-tropical climate by any means, and the patient who goes there then expecting to camp out, or wear his summer clothing, makes a great mistake. The nights are always cold—sometimes very cold—and the days are mostly bright, dry, and beautiful, but often very cold also, so that warm winter clothing, and an abundance of it, is needed.

A Philadelphia lawyer was sent to Colorado Springs last fall by one of the ablest physicians of his city, and was told that he could live out of doors, hunt, fish, shoot, etc. Wrapped in his heaviest ulster, and pacing up and down the hotel piazza in the sun to try and keep warm, the man told me that if he had given a legal opinion with as little knowledge of the facts as that he would have been disbarred.

Catarrhal diseases of the respiratory tract are the common and prevailing ailments in Colorado, and new-comers are greatly annoyed for a time with dry nose and throat, induced by the passage of the very dry air over the mucous membrane. Adaptation to the new conditions soon takes place, however.

As to other conditions, it may be said that the society is good, and the people educated and affable to an unusual degree. There is plenty of interest to

<sup>1</sup> Read at the Mercer County District Medical Society, October 10, 1893.

divert one; saddle-horses are abundant, cheap, and good; roads fair, and in some places excellent; food equal to that found anywhere; and stores well stocked for all one's needs, but with prices for board and merchandise about a fourth or sixth higher than in the East. The houses are well built, warm, and comfortable, with ample provision for heating; electric lights and railroads are in all large towns; and first-class transportation, with good dining-car service, is present all over the States and to the East.

For certain well-selected cases Colorado is admirably adapted, but the medical men of the world make a mistake in fancying that all cases of pulmonary tuberculosis will do well in Colorado. Many tuberculous patients are hurried to the grave by a trip to Colorado. In some the disease is arrested for a time, to be accelerated later, while in others the arrest may be complete and permanent. Cases far advanced, very young patients with active disease—in fact, acute cases of tuberculosis do not do well here; indeed, they do not do well anywhere. The best results are had in slow non-febrile, and hemorrhagic cases of a subacute kind, in which there is an apparent effort to resist the disease, and when a degree of immunity may have been established. When valvular heart-lesions exist, or the kidneys are damaged, the patient should not go to Colorado.

Those who go and get the best results spend as much time out of doors as possible, and are guided as to exercise in that rarefied air by a good local medical adviser. Grave mistakes may be made if one yields to the stimulation of the rarefied air, and exercises violently. The effect of the air and altitude has been aptly spoken of as "champagny," and patients must be cautioned to go slowly until they are acclimated.

The climate of Northern New Mexico, in the vicinity of Los Vegas and Santa Fé, is much like that of Colorado Springs. It is, perhaps, not so subject to sudden change, and on the whole is warmer. At Los Vegas there is a good hotel, where one may have all he requires, and Santa Fé is a very curious old town, full of interesting things.

In Southern New Mexico, Western Texas, and in Arizona, all of the conditions are very different from those of Colorado. The elevation is less, the soil is different, the water is for the most part so alkaline as to be very distasteful and disturbing to those not accustomed to it. The rainfall is much less, and the dust is dreadful. The sun is hot, and one very soon feels the enervation and *ennui* of it all. In addition to all this, the hotels in Albuquerque, El Paso, Tucson, Phoenix, and Yuma are bad beyond endurance. The food is wretched, and the people one meets, with a few notable exceptions, are not attractive companions.

There has been a disposition of late, on the part of some Eastern consultants, to send tuberculous patients to this arid country; but their ideas of it were not formed after seeing and carefully investigating its fitness for such cases, or none would be sent there by men of conscience.

A territory that offers no more in comfort, associations, entertainments, or natural advantages than this, and is by reason of its heat, dust, bad water, and poor domiciles so uncomfortable, and is in addition as unhygienic as the filthy habits of the native Mexican and Indian population can make it, is no place for a delicate Eastern invalid with a cultivated taste for many things that have become necessities of life, and that are here unattainable.

Acquired tuberculosis is very rare, almost unknown, in Colorado. The natives do not have it or acquire it from the many invalids about them. Children of tuberculous persons grow up free from it, intermarry, and rear children who do not acquire it. In Arizona the disease is common and fatal among the native population—the Indians having it in a rapidly fatal form, like that which affects our negro; it not rarely runs a course of only a few weeks or a month or two.

In my opinion, if there is any place on this earth where all the conditions combine to create a field where a tuberculous patient would not do well, that place is Arizona. And when I add to this the mournful tales of actual disappointment and disaster here, I am constrained to beg my co-laborers of the East to cut Arizona from the list, and save their patients trials and discomforts, and themselves remorse. The few cases reported as doing well in Arizona are of a type that would do well anywhere, if they were relieved of care and worry, and could lead an out-of-door life—cases not far advanced, with good resisting powers, and, above all, able to exercise out-of-doors enough to create an appetite that is not critical.

Southern California, in the vicinity of Los Angeles, Pasadena, Riverside, Santa Barbara, or San Bernardino, is a charming State; and San Diego is quite as charming as any of the towns named, and claims a better climate in point of equability of temperature and greater dryness. This claim must be allowed. Here, again, certain invalids do well, for it is possible to be out of doors day after day, and, excepting in the rainy season, it is, any of it, dry enough.

The chief fault to be found with any of these points in Southern California is the same. One falls at once into the lassitude of the semi-tropical atmosphere, and suffers in body and mind from the consequent depression. The dust is bad in the dry season, and the heat of the sun is intense.

Pulmonary tuberculosis is a disease of house-builders, is contagious; it starts in portions of the



lungs least used, and its course is modified by the nutrition and nervous energy of the subject. To combat it, then, it is best to keep out of houses as much as possible (day and night); to avoid contact with tuberculous patients indoors; to "keep out of dust and out of crowds;" to fully expand the air-vesicles of every portion of the lungs many times a day, and best in a rarefied air; to maintain the nutrition by proper exercise and good food, and to remove the person from the cares and worries of business or household. Medicines may be auxiliary to this course, but can do little good when these means are ignored.

California has many conditions favorable to carrying out such treatment, and is no doubt well adapted to the needs of some cases.

Arizona and Western Texas have very unfavorable conditions, while Northern New Mexico, Colorado, and Southern Wyoming offer the very best to be found on this continent, if not on earth. The altitude, dryness, air-currents, sunshine, good-fellowship, and good living make these regions a Mecca to which a certain proportion of the tuberculous patients of the world may go and receive benefit, if they will but go early.

The opportunity is presented for the medical man of the East to exercise rare good judgment in the selection of cases to be sent to Colorado. If he waits till he has exhausted his pharmacopeial resources on a case, and at last sends the patient away to get him off his hands, he must expect no good to come of it. Grasp the situation early; don't temporize or procrastinate; state the *true* condition of things fairly and honestly to the patient or his friends, and make your recommendation with the force and earnestness you would use with any other prescription, when once a painstaking conclusion is reached, and you will not be reproached or feel remorse.

I feel it my duty to add that I believe the curative effect of climate has been vastly overestimated by the great body of medical men, and that a properly directed out-of-door life—rain or shine—will do nearly as much for us under the same conditions of freedom from work and worry as the best climate on earth could do. Returning as I do after a year of health-chasing, to find many of my old patients or acquaintances who have had tuberculosis for years (some as long as thirty), as well, or better, than I left them; to find others apparently well, or with greater improvement at least than I have made, is enough to set one to thinking.

I can recall many cases of the disease, well-advanced, with a history of hemorrhages, etc., that have entirely recovered in New Jersey; and many men of this sort went to the front in 1861, endured all the privations of campaigning, and came home sound

and robust, cured by the out-of-door life—some, I regret to say, only to die of a re-development of the disease after a few years of work in the store or office.

Another fallacy is that if one goes West and improves, he must stay there. The truth is, if one improves after a long out-of-door holiday in the West, he cannot expect to go back to his old work and environment, wherever situated, without risk. If he comes back to continue (to a degree at least) the life led West he may hope for good health in the ratio of his approximation to his Western habits.

There are many places within a few hundred miles of New York where Nature is as undisturbed and the atmosphere as pure and free from dust and disease-germs as any that can be found west of the Mississippi. The Adirondacks in New York, the piny regions of New Jersey, or the wilds of Pike County, Pa., offer about all the advantages of Colorado, excepting extreme dryness and great elevation; and it is only under certain circumstances, and for certain well-selected cases, that these are necessary or desirable.

Patients who have not the strength or vitality to lead an out-of-door life in New Jersey will get little or no benefit in Colorado, and need not go to Arizona or California to find conditions no more favorable for their improvement than can be found in the Carolinas, Georgia, or Florida.

The rigors and vagaries of a Northern winter are as well avoided in the Southeast as in the Southwest; the feeble patient is nearer home and friends in case of severe illness or death; he avoids a long and exhausting railroad ride, and is free from the dust and unsanitary conditions of Arizona and the forsaken, far-away, friendless feeling so common in Southern California.

My advice about this whole matter is: keep out of doors, "out of dust and out of crowds;" for the favorable cases (with few exceptions) the place is less important than the kind of life followed; for the unfavorable ones, the nearer home and friends, the better.

*An Early Sign of Pneumonia.*—MORISON (*Lancet*, No. 3656, p. 746), in several cases presenting the general symptoms of pneumonia in the absence of the ordinary physical signs, has observed a jerky expiration over a limited area, in which he subsequently found developed the usual signs of pneumonia. This jerky expiration is believed to be the first physical sign developed, and can be heard soon, if not immediately, after the rigor, before dulness or crepitation appears. The sign is more distinct in children, but has also been observed in adults. It is suggested that the phenomenon may be due either to the primary congestion interfering with the elasticity of the lung or to the better propagation of the heart-beats through a more readily conducting medium than the healthy lung.

## ORIGINAL LECTURE.

- I. TRAUMATIC EPILEPSY DUE TO FRACTURE OF THE SKULL, TREATED BY EXCISION OF BONE AND NEURECTOMY OF BOTH SUPRA-ORBITAL NERVES.**
- II. BURROWING ABSCESES OF THE ABDOMINAL WALL AND PELVIS DUE TO ULCERATIVE APPENDICITIS, TREATED BY REMOVAL OF THE APPENDIX AND DRAINAGE.<sup>1</sup>**

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THE first case that I shall present to you is a boy, of about twelve years of age, who was kicked in the middle of the forehead by a mule about two years ago, resulting in some form of fracture of the frontal bone. This was treated in the ordinary manner by antiseptic dressings, but no trephining was done, and no special exploration of the wound made. At the end of about six months the boy began to have true epileptic seizures. He bit his tongue and exhibited the ordinary convulsions of an epileptic. Close questioning of the patient has failed to find any other cause for the disease than the injury, and he is very positive that he had no convulsions previously to the time that his head was hurt. You see the scars of the injury and of a former operation, situated above the root of the nose and running horizontally. I find no other cicatrix of the scalp, but notice that the boy flinches when I make pressure over the left supra-orbital nerve. The right supra-orbital nerve is less sensitive, but seems more tender than is normal when such pressure is made over its point of exit from the supra-orbital foramen. The scar itself is also tender. In other respects the boy is healthy.

Dr. Graham, to whom he was brought some months ago, made an incision over the area of the fracture where a depressed scar was located. He found the frontal bone driven in by being bent very much in the manner of a green-stick fracture of the long bones in young children. He removed a narrow strip of depressed bone across the forehead. The epileptic seizures were absent for a time, but gradually returned. The boy comes back to-day to see if anything further can be done for deliverance from his disease. There is no history, so far as we are able to ascertain, of epilepsy in the family.

This, then, is a case of traumatic epilepsy, associated, with fracture of the skull in the frontal region. The question to determine is whether we shall do a secondary bone-operation by cutting down and taking out a portion of the skull, or simply lift up the scalp and endeavor to relieve irritation due to cicatricial pressure upon the supra-orbital nerves that are being pinched. If we make our incisions in the lines of the normal creases of the forehead as I have mapped out on the board, we shall make a less noticeable scar than if the incisions followed other lines. Instead of making a new scar I shall, moreover, make the incision in the position of the old one. I can reach the supra-orbital nerves, I think,

by pulling down the flap, without making a vertical incision in the forehead. This will give rise to less disfigurement than if an additional incision is made in an oblique or upward direction.

In the first place, after using chalk for illustrations on the blackboard, or touching anything else, I again sterilize my hands. The finger-nails of the surgeon are one of the most dangerous factors in connection with operations. I may add that I use a saturated solution of potassium permanganate as a disinfecting agent for my hands, and wash them afterward in a saturated solution of oxalic acid in order to get rid of the discoloration made by the potassium permanganate. I have previously effectively used the finger-nail-cleaner and brush with hot water and soap.

As soon as the patient is etherized we shall remove the antiseptic dressing from his shaven head. His bowels have been opened, and the stomach has received no food for a number of hours. The patient, about a half-hour ago, was given a sixth of a grain of morphin and one one-hundred-and-twentieth of a grain of atropin hypodermatically. The amount of ether required during the operation will thus be less, and there will be less bother from accumulation of mucus in the bronchial tubes. By giving the drugs mentioned, one does not have the coughing and spitting due to accumulation of mucus in the bronchial tubes; the recovery from the ether is comfortable, with little vomiting; the patient will probably sleep for two or three hours, and there will be no necessity of giving an anodyne after the operation to relieve pain and soreness.

Although sterilization of the seat of operation has been assured in the wards by the nurses, and the part covered by antiseptic dressings, I usually re-sterilize my patients when they are put on the operating-table, giving the leg, or abdomen, as the case may be, a drenching with mercuric chlorid solution, 1:1000 or 1:2000. I do not suspect my nurses any more than myself, but I am not sure of anything. I have caught myself sometimes doing things entirely unconsciously, which might neutralize my previous efforts to be aseptic. Hence, I may seem hypercritical in my preparation for operation.

In skull-operations I ordinarily put a narrow Esmarch band around the head, which stops bleeding from the scalp; but here I cannot do it, as the incision will be low on the forehead, and I shall have to be satisfied with catching the vessels as they spurt.

I now make an incision across the front of the forehead along the line spoken of, and the assistant catches with hemostatic forceps such vessels as bleed. I can feel through the skin a depression due to the old operation. It is a little above my incision. I made the incision somewhat low because I want to get down to the supra-orbital notches, in order to excise the tender supra-orbital nerves. I can see now the point of the original operation. It is a little more inconvenient when you come to work upon a bone previously operated on, because cicatricial adhesions have taken place, and the parts have been thickened and somewhat displaced. You can see a dent in the bone where the craniectomy was made by the previous operator. It appears that the opening in the skull has actually closed with bone, which is unusual. I shall first take out the nerves. I

<sup>1</sup> A clinical lecture delivered by invitation at Rush Medical College, Chicago.

have cut, as you see, the supra-orbital artery, which is spurting and affords a guide to the notch, which I now show you with the supra-orbital nerve coming out of it. I clear away the tissues about the supra-orbital notch as much as possible, but I find it is hard to keep it in view, because the supra-orbital artery bleeds freely. The supra-orbital nerve in this instance comes through an actual foramen. It is not simply a notch with a band of ligament over it as we often find. I cut out the little piece of bone which makes the lower margin of the foramen in order to enable me to reach the nerve further back. I also nearly always cut out a piece of bone, when I operate on the infra-orbital nerve for trigeminal neuralgia, because if I chisel out the piece of bone completing the opening I can get hold of the nerve further back with forceps and draw it forward and break it off far back. A hemostatic forceps is the best instrument with which to seize this nerve. I have drawn out quite a portion of the nerve and broken it off, and will now scrape out the groove and get every particle of nerve-tissue out of it. The nerve of the other side, which although not so tender, seems to be a little sensitive, must now be exposed. On this side the nerve is not in a foramen, but in a notch. As I cut away the tissues in the notch the orbital fat protrudes, because there was not, as on the other side, a true foramen. I have done all I desire with these two nerves by cutting out a piece of each, and shall next devote my attention to the skull. The depression or groove in the bone is big enough to put my finger in, but it is not very deep, and it extends across the forehead. There is difficulty experienced in raising the periosteum, on account of its adherence to the bony scar due to the previous inflammatory process at the seat of operation. We have now made the area clear of periosteum. The depressed region extends over and crosses the median line of the frontal bone, upon which is the beginning of the superior longitudinal sinus.

Sometimes in opening the skull I use a trephine, and sometimes a chisel. I find that I use a chisel more and more, and the professors connected with this college tell me that they have almost abandoned the trephine. The trephine makes a round hole, whereas with a chisel one can get an opening of any shape that may be desired. The round opening made with the trephine is readily made of any shape by cutting away the edges with the gnawing forceps. In osteoplastic operations on the cranium, when it is desirable to preserve the bony flap and replace it, the chisel is the better instrument. It is here necessary to remove a considerable portion of bone, and I shall not want to replace it, because it is possibly the cause of the trouble by making pressure upon the brain or by irritating the dura. Therefore I shall not save the bone, and a trephine is as good as the chisel. If you expose the brain to remove a tumor or a cortical center for Jacksonian epilepsy, you keep the piece of bone in an antiseptic solution at a temperature of 105°, then replace it afterward, so that the perforation in the skull will be closed with bone. In this case I do not want to do that, because it is necessary to have the brain free from bony pressure.

The frontal bone is comparatively thin, and I have to proceed rather cautiously. If I open into the frontal sinus I may subsequently have to use a smaller trephine

to cut through the posterior wall. I presume the two walls are close together, from what Dr. Graham has said. They may be solidified into one. Indeed, the boy is too young to have a well-developed sinus. A disadvantage in the use of the trephine is that if the skull is thicker in one part than in another it cuts unevenly, and you penetrate one side more quickly than the other, and by so doing you may injure the dura. At times therefore I use my segment-trephine, which cuts only along two-thirds of the circle. This instrument is employed after the groove has been started by an ordinary trephine. Here I shall start by perforating the bone with a trephine, gnawing the opening as large as is demanded. This aseptic trephine is one I devised to avoid having a hollow stem and a screw for the center-pin, which are so apt to get full of dirt and grease and become septic. The trephine is simply a cylindrical saw and cuts only in one direction, therefore I make semi-rotations with it in removing the button of bone. It is a good deal harder to get a trephine sharp and keep it so than a chisel, and this is another reason why the chisel is often the better instrument.

I show you the removed disc of bone, with a dent in it on the external aspect, through which the fracture passed. On the inner surface is a thick papule or osteophyte due to a new growth of bone, which pressed down on the dura. This projection of bone was made by the ossification of the fracture on the inner surface, where the vitreous table was more extensively fractured than the external table. This is sufficient to have caused the epilepsy.

A few months ago a patient came under my care who had sustained an injury of the head. He was struck on the temple by a lever or some part of an iron door which was thrown open against him. He was not treated by a physician, and had had nothing specially done for him. A few months after the injury he began to have epilepsy. I found in that case, as in this, a papule of bone like the top of a collar-button, which had been the result of an accentuated or punctured fracture due to the injury; yet the symptoms after injury were so slight that he never suspected that he had a fracture of the skull, and had not shown symptoms sufficient to induce him to apply to a doctor for the original injury. Epilepsy followed, with beginning insanity. That fracture demonstrated the importance of primary trephining in all cases of punctured fracture or fractures due to accentuated violence. A similar distinct process of bone has been pressing on this boy's dura. It will be wise to cut away all depressed bone in this case with the chisel and the gnawing-forceps. Here is found a curious condition: The bone has running directly through it a piece of fibrous tissue attached to the dura mater internally and the soft tissues externally. It is probable that the groove made in the former operation in healing caught some of the pericranium, and thus grasped it in the osseous cicatrix. This tissue is not a part of the dura, for that was not lacerated or incised either by the injury or the first operation. This fibrous partition, however, is attached to the dura, as you perceive, when traction is made on it. Such a condition is conducive to dural irritation leading to epilepsy.

Three things, then, have been found each of which would be sufficient to cause the convulsions, viz., the osteophyte pressing upon the dura, this entanglement of pericranium in the bone-scar, and the supra-orbital



nerves made sensitive by the cicatricial pinching of their branches. The pain in the nerve was, without question, due to the pinching of the pericranium by the gradually closing sides of Dr. Graham's craniectomy. It is remarkable that the opening in the bone should thus be repaired, in such a manner as to bite the soft tissues, as it were. I have taken out the whole area of depressed bone, making an opening across the forehead about a half-inch wide and about three inches long, and there is no longer pressure on the dura or the brain. The excision of bone is so extensive that there is little probability that the opening will close as it did before. There is now no depressed bone that can give rise to irritation of the dura and be a cause of epilepsy. Hence the boy will be greatly benefited, I believe, and perhaps permanently cured, if treated with bromids, continued for a long time, to break up the convulsive habit. The local physical cause has been removed.

I formerly used threads of catgut for drainage in all of these cases, but recently I have not done so, believing that, if the wound is thoroughly aseptic, the blood-clot will become organized, and there is no danger of suppuration. I am in the habit of closing the wound at once, covering it with iodoform and collodion, and trusting to asepsis and organization of the clot.

When I go out of town to operate I nearly always use capillary drainage. I think it is safer to do so if you have not the patient under your care all of the time. When one operates at home and has his own nurses, he will at once be notified if anything should go wrong. If patients are in the country the after-treatment cannot be followed so closely; and when the nursing is more or less inefficient it is best to use some form of drainage. It is safer for the patient. If you do not put in drainage-threads or a drainage-tube, the wound, however, heals more quickly, because by sealing with gauze, iodoform, and collodion you get immediate union throughout the whole length of the wound. The probability is that in three or four days this patient will be sitting up, and that he will be out of the hospital in two weeks. I put in a few interrupted catgut sutures to bring the parts together, use a few catgut threads for drainage, dust a little iodoform over the wound, and finally apply a large dry dressing. It will be well for us to seal the lower edge of the dressing along the brow with collodion, because it is difficult to keep the edge in contact with the brow by means of bandages without entirely covering his eyes. I thus reinforce the dressing at the lower end, by the application of collodion, to be sure that germs do not gain entrance by the boy trying to see.

NOTE.—The operation-wound healed practically by first intention, though there was a drop or two of purulent secretion about the suture-punctures in the skin. The boy was discharged from the hospital in about three weeks. He had some epileptic seizures after the operation, but they were much less frequent and less severe than for several months before the operation.

**BURROWING ABSCESES OF THE ABDOMINAL WALL AND PELVIS DUE TO ULCERATIVE APPENDICITIS; TREATED BY REMOVAL OF THE APPENDIX AND DRAINAGE.**

This young girl, while playing with other children at school last winter, was struck in the right inguinal region

with a snowball. She went home, but could not go to school the next day on account of pain, and a physician was finally summoned. The patient continued to have considerable pain, and finally an abscess appeared in the right inguinal region. This was opened by her attendant, but continued to discharge pus, and the girl was brought to the hospital some months later with a discharging sinus at that point, and with the thigh in a flexed position. It was difficult for Dr. Senn to make out whether the case was one of appendicitis that had occurred coincidentally with the injury from the snowball, but unconnected with the injury; or one of appendicitis, due to the blow, going on to suppuration; or one of traumatic hematoma in the tissues of the lower part of the abdomen, which suppurated because of bacterial infection due to proximity to the cecum and vermiform appendix. The abscess was opened, but the appendix was not removed. It is possible, although not probable, that we have here an abscess of a tuberculous nature—that is, a puriform collection arising from tuberculous disease of the vertebræ descending in the sheath of the psoas and iliac muscles.

An interesting point in the case is that when the girl came into the ward the thigh was flexed. That might mislead the surgeon and cause him to think the condition coxitis, or a perinephric abscess, causing spasm of the psoas muscle. It has been said that a good many of the cases of supposed coxitis that recover so rapidly, with perfect motion of the joint, have probably been cases of muscular flexion due to psoas-spasm and the result of a simple perinephric cellulitis. Tuberculous perforation of the acetabulum and the entrance of pus into the cavity of the pelvis might be present and due to progressive coxitis. I do not think that is the case here. Under etherization some weeks ago the leg was readily put in an extended position and kept so for a short time by a gypsum dressing. The flexion was evidently due to the child lying long with the hip bent when the abscess was recent. The deformity is now gone. Near the sinus I feel that within the abdomen there is a hard mass, showing that there is still some inflammatory exudate present. The uterine sound makes one of the nicest probes for entering long sinuses, but it must be used with care. One succeeds better by bending the probe a little at the tip, as it then passes the irregularly tortuous channels better. I shall probe with a good deal of caution. The instrument goes over to the left six or eight inches, and is evidently in the abdominal wall.

Dr. Senn has tried his hydrogen-gas test through the anus, and found no escape of gas, but it is said that injections of fluid thrown into the sinus cause an evacuation of the bowels. I shall enlarge the opening, explore the various tracts, and make provision for thorough drainage. I may accidentally open the peritoneal cavity, but shall try not to do so. If necessary, I shall make an opening posteriorly and establish through-and-through drainage. By cutting down on a grooved director through the hardened tissues of the abdominal wall, I enlarge the opening enough to introduce my finger. I am able to penetrate quite a large cavity, which runs to the left, and feel the intestine as it lies in the abdominal cavity, but separated from my finger. There has been no fecal discharge through this opening; but there is apparent evidence that the opening communicates with the intes-

tine in some indirect way. It is possible that we shall find a small opening leading to some portion of the bowel. Pus has burrowed as far as the median line directly over the bladder, but there is probably no opening into the bladder. There was no evidence of pus in the urine when an examination of the urine was recently made. My finger is now on top of the bladder. The abscess has burrowed over here, and is in the belly-wall in front of the peritoneum, or else the bowel is separated from the cavity of the abscess by an adventitious membrane.

On the left side, where I feel the tip of my finger, I shall make a counter-opening and establish through-and-through drainage. It is necessary to enlarge the wound in order to get more room. We shall establish through-and-through drainage by a tube, after scraping out the cavity and washing away the purulent material that escapes from the openings at the two ends of the abscess-pocket. With my finger as a guide, I scrape out the interior of the cavity thoroughly, avoiding the bladder, the position of which I now know, and endeavoring not to break through into the general peritoneal cavity. I feel almost inclined to let well enough alone and not make a search for the appendix, which has probably been the cause of this pathologic condition. If we drain the abscess-cavity thoroughly, it will become shut off from the general peritoneal cavity, and it is possible that the patient will have no further trouble. My incision has exposed coils of intestines near the region of the appendix, but elsewhere the peritoneal cavity is separated from the abscess. This is evidently the cecum that you now see. Notice the characteristic pouched condition which proves the exposed gut to be the large and not the small intestine. One of these longitudinal bands on its wall leads down to the appendix. Here is the base of the appendix. I am now trying to tear the parts loose slowly with my finger, so as to isolate the whole length of the appendix. If I can get to the end of the appendix and find an ulcerative perforation there, we shall have a solution of the case. My finger goes down to a knot of intestine or inflammatory tissue which is tightly adherent to the appendix. There is little doubt that the case is one of appendicitis, with perforation and burrowing of pus. There is a gush of purulent fluid. I shall keep the peritoneal cavity free from this purulent discharge by packing sponges against the intestines. I am working slowly so as not to tear the bowel, near which this abscess is situated. You perceive a fetid odor, and now you see the appendix itself, entirely separated from its adhesions. We have gotten it isolated, but it was difficult to do this without tearing the bowel to which it was adherent. It must be perforated, as it has caused the abscess. I shall tie its mesentery first. I now take the appendix itself and tie it near its base with a silk ligature, and amputate it. Here is the stump of the appendix which I have cut off. I now shove it in so as to invaginate it, and cover it over with peritoneum by sutures of catgut. First I touched the end of the stump with undiluted carbolic acid to disinfect it. Here I show you the perforation in the side of the appendix, which has caused all this mischief. It corresponded with the seat of this abscess and the site of the adhesions and the inflammatory mass about the appendix. Investigation shows that the second abscess-cavity goes down into the true pelvis. I cannot reach the bottom of it.

Notice the pus welling up as I take my finger out. I place the patient in the semi-recumbent position so as to throw the pus away from the general peritoneal cavity. We shall protect the peritoneal cavity from infection by gauze packing, and leave the wound open, after thoroughly washing out the cavity with sterilized water. I would like to scrape it if I could, but this would be a somewhat difficult thing to do. I might do harm by making an opening into the vagina or bladder. This second abscess has burrowed down into the pouch of peritoneum between the rectum and the uterus. It is probable that the desire to go to stool, when fluid was forced into the sinus, was due to pressure on the rectum by filling this abscess-pocket with the fluid introduced.

I now simply pack the wound with gauze to keep it open, pass a drainage-tube through the abscess in the belly wall, and apply the ordinary dry dressing. To-morrow the intestines will be shut off from the external wound by plastic exudate. The gauze will then be removed, and a large drainage-tube passed down into the pelvis following the second abscess-pocket opened to-day. If the temperature rises, this tube will be used as a means of flushing the cavity daily with weak antiseptic solutions. It may be necessary to make a counter-opening into the vagina. I hope not.

NOTE.—The patient did well, and some weeks afterward was reported as convalescing nicely.

## CLINICAL MEMORANDA.

### A CASE OF ACCIDENTAL HEMORRHAGE IN THE FIRST STAGE OF LABOR AT FULL TERM.

By HENRY H. SMITH, M.D.,  
OF RAYTOWN, MO.

As there is some variance among authors as to the symptoms and treatment of the infrequent condition of accidental hemorrhage in the first stage of labor, I report the following case:

On September 11th, I was urgently called to Mrs. R., a robust woman, aged forty-two, in her fourteenth pregnancy, at full term. I found her in a state of collapse, pulseless at the wrist, the extremities icy cold, with great anxiety and restlessness, complaining of blindness and of continuous pain in the lower abdomen. A hasty examination revealed evidence of only slight external hemorrhage, a dilatable os, and a vertex-presentation with the membranes intact. Blood of a dark color and syrupy consistency, giving the characteristic odor of old blood-clots, clung to the examining finger. The womb was greatly distended and bulging into the abdomen; it was rather tense, but still imparted to the hand an inelastic, boggy feel. There were no movements or other signs of life of the fetus.

I at once informed the nurse that the patient was in a very critical state, and called for assistance. My efforts were directed toward reviving the patient. I lowered the head, applied heat to the extremities, and gave hypodermatically spirit of camphor, morphin and atropin, nitro-glycerin, and alcohol, very freely. In twenty minutes I was rewarded by a return of the pulse at the wrist, and in an hour and a half reaction was well established. I adhered to a rule I have always followed in labor, and

gave no ergot until the womb was emptied. The question confronted me from the beginning, whether I should delay or attempt immediate delivery. In the collapsed condition of the patient I believed that the slightest additional hemorrhage meant a disastrous end. Further on, when she had rallied, there were no labor-pains, and consequently there was no promise of contraction and retraction of the womb after delivery. Guided only by the condition before me, I determined to temporize and await developments. The pains in the lower abdomen and lumbar region grew worse and continued without intermission. About three hours after I first saw the patient the physician I had sent for arrived, and after emptying the bladder at his suggestion, we ruptured the membranes and thus brought on feeble labor-pains. The parturient canal was roomy and advancement was due mainly to the expulsive efforts of the mother, rather than to the weak contractions of the uterus. Compression was used over the fundus. In three-quarters of an hour a lifeless child was born, and energetic efforts failed to resuscitate it. The placenta was at once taken away, followed by a basinful of clotted blood. The placental site seemed to have been at the fundus, though the placenta was wholly detached when removed. The wound contracted well, we administered a couple of doses of ergot, and the woman proceeded to a good recovery.

Two weeks before confinement the patient had had a violent fall on the buttocks, which was followed several times, at intervals of a few days, by what she termed "sinking spells"—symptoms of internal hemorrhage—occurring usually at night while she was in bed. Traumatism is considered the most fruitful source of accidental hemorrhage before labor, but in a paper by Dr. Coe, of New York, read before the American Gynecological Society, in 1891, he stated that traumatic injury was the more infrequent origin of hemorrhage during full-term labor, which is the more fatal form.

The readiness with which the circulation regained its volume led me to believe that the collapsed condition was not wholly due to exhaustion from loss of blood, though the hemorrhage was great, as was shown by the débris finally discharged from the womb; it was doubtless in part produced by shock incident to the sudden and extreme over-distention of the uterus. I attributed the absence of labor-pains to loss of contractile power, caused by the abnormal stretching of the uterine muscular fibers.

#### CHANGES IN REFRACTION AFTER CATARACT-EXTRACTION.

BY CHARLES W. KOLLOCK, M.D.,  
OF CHARLESTON, S. C.

ON the 5th of last June I removed a cataract from the left eye of Mr. Y. He was not a strong man, as he suffered considerably at times from indigestion and bleeding piles.

An iridectomy was performed, and the operation was finished without any mishap, except the lodging of a piece of cortical matter in the upper pupillary space. A few careful attempts were made to expel it, when it was seen that the vitreous was protruding, which caused displacement of the edges of the incision. The subsequent

healing was slow, but continued without any further complication. The cornea at the incision was somewhat bulged, but the shape gradually improved, so that after the secondary operation had been performed, vision with +10 D. was 15/70. Twelve days later, with +11 +2 cyl. ax. 180°, vision was 15/40 and 15/xxx (?). Nearly two months later he came, saying the glasses did not suit. He was again tested, and refused all cylinders; but with +14 D. vision was 20/20 (?), and he read small pica with +16 D. The 14 D. lens was not only best for twenty feet, but for infinite distances.

This case is interesting on account of the various changes that occurred in the corneal surface, which was, of course, more irregular at first from the lack of coaptation of the edges of the incision, but the gradual increase of the strength of the lens to such a degree is unusual.

I have thought that the report of this case would be of interest to those who heard and took part in the discussion of Dr. Jackson's paper in the Ophthalmological Section of the Pan-American Medical Congress.

#### NEW INSTRUMENT.

##### AN ESOPHAGEAL STETHOSCOPE: WITH REMARKS ON INTRA-THORACIC AUSCULTATION.<sup>1</sup>

BY SOLOMON SOLIS-COHEN, M.D.,  
PROFESSOR OF THERAPEUTICS AND CLINICAL MEDICINE IN THE PHILADELPHIA POLYCLINIC; ONE OF THE PHYSICIANS TO THE  
PHILADELPHIA HOSPITAL, ETC.

THE instrument that I have here is a modification of one suggested by Sir Benjamin Ward Richardson. In the course of that observer's examination of a case of suspected stricture of the esophagus, in which no obstruction was shown by the "water-gurgle" test, and he had concluded to pass the stomach-tube, it occurred to him that, perhaps, if he attached the terminal of his double stethoscope to the stomach-tube he might notice the presence of friction as the tube passed over the stricture, or the absence of friction and of stricture; in this particular case he found no friction and determined that there was no stricture. It then occurred to him that in many cases it might be useful to employ a similar apparatus in listening to the sounds of the heart and possible murmurs in the vessels, as in cases of aneurism, unmodified by transmission through the chest-wall, and that possibly he might be able to hear the sounds of the lungs in the same manner. He also thought that certain sounds generated in the stomach might give information as to the manner in which the gastric functions were being carried on; while the sounds of the abdominal aorta could be heard through the stomach, unmodified by the pressure that on external auscultation is so often a cause of doubt in interpreting the causation of murmurs.

In attempting to repeat Dr. Richardson's observations, I found that there was occasional danger of the regurgitation of fluid through the tube into the ear-pieces. To obviate this objection I have introduced between the stomach-tube and the ear-tube a rubber capsule contain-

<sup>1</sup> Presented to the College of Physicians of Philadelphia, November 1, 1893.



ing a diaphragm of gold-beater's skin, which serves as a barrier and as a resonator. The capsule can be readily taken apart and cleansed, and new diaphragms can be inserted when needed. I exhibit the improved instrument, as skilfully made for me by Messrs. Tiemann & Co., of New York.

The esophageal tube is of soft rubber, No. 27 of the French scale, having a lateral eye near the blunt tip. On the same side as the eye, beginning five inches therefrom and extending up to a distance of nineteen inches, is a series of indentations, one inch apart, which show how far the eye of the instrument is from the patient's teeth. By experiments made outside of the body I have found that the sound heard is transmitted from within a radius of an inch and a half or two inches from the opening in the tube, the sound being most distinct when the eye is in close apposition to the source of sound. I have used the instrument to listen to the sounds of the heart only, not wishing to risk the passage of the tube in cases of thoracic aneurism and not being able to hear through it the lung-sounds.

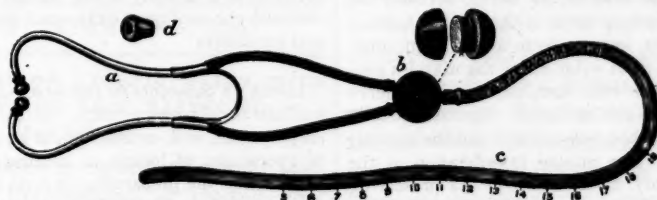
The most striking difference between the sounds of the heart as heard in the ordinary way and the same sounds as heard through this instrument is the almost uniform quality of the first and second sounds—that is, the

the esophageal stethoscope. The regurgitant murmur was heard distinctly, but I could not make out that any part of it was presystolic. I do not know whether there is an acoustic reason for this, or whether it was due to lack of skill with the instrument. I have no doubt of the correctness of the diagnosis.

I have also used the method in one case in which there was doubt as to the coexistence of aortic diastolic and aortic systolic murmurs, but the apparent murmur of regurgitation was not heard through the esophageal stethoscope, whilst the systolic murmur was heard distinctly, and a good closure-sound was heard. This, I think, warranted affirmation of arterial roughening rather than valvular lesion.

While speaking of the use of the tube to clear up the doubt in cases of suspected aneurism, Sir B. W. Richardson remarks that the good sense of the physician must determine whether or not in given instances the method is dangerous, and not to be used.

As to the importance of intra-thoracic auscultation, I cannot as yet speak positively. I do not know how far it will be applicable in cases of doubtful diagnosis—in others it is not needed—or what its exact limitations are. I consider it, however, one of the methods that we may usefully employ among others in making exact



Esophageal Stethoscope.

a. Metallic conducting-tubes of "Albion" stethoscope. b. Capsule with diaphragm. c. Esophageal tube with indented scale. d. Soft rubber caps for ear-pieces.

sharpness of the second sound, as heard by the ordinary method, is wanting in auscultation by this method. The rhythm is of course the same; the second sound is the shorter, and the pause is easily appreciated. It is possible to separate the two sounds and hear the first sound alone, or the second sound alone, or to hear both. At a distance of from eight to nine inches from the teeth, only the second sound is heard; at ten or eleven inches, both sounds are clearly heard; and at thirteen or fourteen inches only the first sound with, perhaps, an ill-defined second sound. I have not satisfied myself as to my ability to differentiate between the aortic and pulmonary sounds by varying the position of the eye of the tube.

My largest number of observations have been made on persons with healthy hearts, who were under treatment for stomach-troubles, and thus accustomed to passage of the esophageal tube; but I have been able to use the instrument on other patients, with and without cardiac disease; among them two cases in which by the ordinary method of examination I had diagnosed the existence of mitral obstruction. In one of these two cases mitral obstruction alone was diagnosed by the ordinary methods of physical examination; and in the other, mitral obstruction and regurgitation. In both cases I failed in each of two examinations to hear the obstructive murmur through

observations, and for this reason I have brought the subject before the College for discussion, in the hope that other Fellows may be led to study it.

It is only right to say that two other communications on the subject of intra-thoracic auscultation, one by a German observer, the other by two English observers, have appeared since Dr. Richardson's publication, and apparently as independent studies. Their conclusions are not cited here, as the subject still requires individual and unbiased work.

## MEDICAL PROGRESS.

*Disease of the Corpora Quadrigemina.*—At a recent meeting of the Clinical Society of London, TAYLOR (*Medical Press and Circular*, No. 3845, p. 500) reported the case of a boy, four years old, who four months before coming under observation became ill, would not eat, and presented drooping of the eyelids, followed by gradual loss of strength. For two weeks there had been staggering, the incoördination being increased at the same time as the drooping of the eyelids was worse. The child appeared to be somewhat drowsy and spoke slowly; his gait was markedly ataxic, the feet being thrown forward and suddenly brought down, heels first;

on trying to stand he oscillated forward and backward. He could not touch the tip of his nose with the tip of his forefinger, nor bring the tips of the fingers of the two hands accurately together. The head and neck also oscillated in an antero-posterior direction. There was nearly complete double ophthalmoplegia, including double ptosis, more marked upon the right, and paralysis on both sides of the superior, inferior, and internal recti, and, so far as could be determined, of the superior and inferior oblique. There was some lateral nystagmus. The pupils were slightly and unequally dilated, and reacted to light. There was no optic neuritis and no choroiditis. The child could not see, but no accurate record was made of the powers of vision. After the lapse of a month the child became semi-conscious, swallowing with difficulty, and the arms and legs fell flaccid when lifted from the bed. Loss of consciousness became more profound, the breathing assumed a Cheyne-Stokes character, swallowing became difficult and finally impossible, and death ultimately took place six months after the appearance of the first symptoms. Upon post-mortem examination the cerebellum was found to be perfectly healthy, but the corpora quadrigemina were flattened, broader, and more extensive than normal, and gray and gelatinous in appearance. There was a similar gray substance at the base of the brain, between the crura cerebri and invading them in their inner halves; the third nerves were lost or torn away from their attachments. In the right orbit all of the muscles supplied by the third nerve were atrophied, and the nerve and its branches could not be found. In the left orbit the nerve and its branches were present and the muscles were fairly healthy. The minute investigation of the parts was unsatisfactory, from failure in the preserving methods, but there was no doubt that the corpora quadrigemina and adjacent parts were changed by new growth, probably of a glio-sarcomatous nature.

*Epilepsia tarda* is the designation that MENDEL (*Deutsche medicin. Wochenschr.*, 1893, No. 45, p. 1108) would apply to epilepsy that appears after the fortieth year of life. From a statistical analysis he has found that the condition is both relatively and absolutely more common among males than among females. Hereditary predisposition plays an important etiologic rôle in this form, as in other forms of epilepsy. The course of *epilepsia tarda* is in general milder and comparatively less progressive than that of the ordinary form of epilepsy, and the mental condition suffers less, even after prolonged existence of the condition.

*Temporary Aphasia following Contusion of the Left Side of the Head.*—GAUDOIN (*Indian Medical Record*, vol. v, No. 7, p. 222) has recorded the case of a girl, ten years old, who came under observation in an unconscious condition, and presenting a contusion of the left side of the head, the result of a blow. On the following morning a hematoma about the size of a walnut was found at the site of injury above the left ear. The patient had recovered consciousness, but there was total aphasia. The child answered questions and made known her wants by intelligent signs. In the course of time, however, steady improvement took place, the tumor gradually disappearing and speech returning.

## THERAPEUTIC NOTES.

*The Treatment of Chronic Gastric Catarrh.*—As the result of a thoughtful study of the measured effects of certain therapeutic agents, including lavage, hydrochloric acid, and intra-gastric faradization and galvanization upon the secretory and motor functions of the stomach in cases of chronic catarrh (glandular gastritis), STEWART (*Therapeutic Gazette*, November 15, 1893, p. 744) comes to the conclusion that in the treatment of this condition lavage is of service as a cleanser of the mucosa and as a stimulant to the most important of the gastric functions—the secretory and motor; although for all purposes but the last lavage is decidedly inferior as a remedial agent to the intra-gastric application of electricity. Hydrochloric acid, administered even in full doses, after meals, is of less value as a stimulant to the secretion of the hydrochloric acid of the stomach than as a digestant; even in this capacity it may be of little utility in the total absence of hydrochloric acid from the gastric secretion. Under such circumstances benefit may be derived from its employment in large doses in combination with pepsin. Of the various agents employed in the treatment of gastric catarrh, by virtue of their influence upon the secretion and motility of the stomach, none is comparable with the intelligent daily use of intra-gastric faradism and galvanism.

*Loretin—a Substitute for Iodoform.*—SCHINZINGER (*Centralblatt für Chirurgie*, 1893, No. 45, p. 984) reports the employment, with satisfaction, in a considerable number of operations, of loretin as a substitute for iodoform. Chemically, the preparation is meta-iodo-orthochinolin-sulfonic acid, and it is claimed that it lacks the disagreeable odor and the toxic properties of iodoform. The body is a yellow, crystalline powder, in appearance suggestive of iodoform, but entirely without odor. It is but slightly soluble in water and in alcohol and practically insoluble in ether and in oils, although with the latter it forms emulsions, and particularly with collodion. As a sulfonic acid, loretin forms metallic oxids; of these the alkaline salts are soluble in water with the production of an orange-red color. A solution of the sodium salt of from 2 to 5 per cent. commends itself for purposes of irrigation or topical application. Careful investigation demonstrated the innocuousness of the preparation and the absence of renal irritation after its use. The drug is also free from irritating action upon the skin. Gauze impregnated with loretin has been employed when indicated.

*Benzol for Influenza.*—ROBERTSON (*Lancet*, No. 3663, p. 186) relates that he has treated a number of cases of influenza with benzol, with the best results. The drug was administered in doses of five minims every two hours and a half, in the form of an emulsion, in lemonade. As a rule, in about two hours after the first dose the general discomfort had disappeared, and within the first twenty-four hours the temperature was observed to be normal. Convalescence was usually rapid and followed by very little debility. Correspondingly good results were observed in cases of whooping-cough treated with benzol.

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SATURDAY, DECEMBER 16, 1893.

## THE TREATMENT OF TYPHOID FEVER WITH INJECTIONS OF DEAD BACTERIAL CULTURES.

How many "specific remedies" have been recommended in the treatment of typhoid fever we should be afraid to say. A long series of intestinal antiseptics has been tried, but each of them in turn has been abandoned. At the moment the general opinion seems to be that where it is practicable, as in large hospitals, the cold-bath supplemented by purely symptomatic treatment, gives the best results. But even by this method not much has been gained beyond an amelioration of the general symptoms, and, perhaps, a moderate lowering of the death-rate. The duration of the disease has not been shortened, and it has even been claimed that relapses are more frequent than when the cold baths are not employed.

It is evident, however, that we are not to fail in the therapy of typhoid fever for want of trying, and already another system of treatment has been suggested, and this time from an entirely new, although, perhaps, not an unexpected, quarter. It will be remembered that last year BRIEGER, KITASATO, and WASSERMANN<sup>1</sup> claimed that by growing typhoid bacilli in bouillon made from the thymus of the

calf (method of WOOLDRIDGE), a culture free from toxic properties could be obtained. In order to completely annul the toxicity and to kill the bacteria it was found necessary to heat the cultures to 60° C. Starting with this fact, EUGEN FRAENKEL,<sup>2</sup> with the assistance of MANCHOT, has prepared such a sterile liquid and has used it in the treatment of some fifty-seven cases of typhoid fever. The mixture was given by hypodermatic injection, preferably deeply into the muscles of the buttock; in no instance did any untoward local effects follow.

The injections were begun with 0.5 c.cm. of the sterile liquid—a dose which appeared to be quite harmless, even for children. As a rule, this had no visible effect, and on the following day 1.0 c.cm. was injected into the opposite buttock. This dose, unlike the first, gave rise, in the majority of cases, to a marked elevation of the temperature, sometimes accompanied by chilly sensations. On the following day the temperature-curve generally showed a decided fall, which was only temporary in the cases in which the injections were then discontinued. FRAENKEL's rule was to give an injection every other day, increasing the dose about 1 c.cm. each time. The continuous fever disappeared, and the charts showed marked remissions in the temperature; the intensity of the constitutional symptoms diminished, and complete apyrexia followed in a very few days. With the fall in temperature the activity of the skin was restored, free diuresis was reestablished, the diarrhea disappeared, and the patient, with an enlarged spleen, and perhaps copious crops of rose-spots, entered into convalescence and soon began to gain in weight. Twelve of these cases were of a grave type; the remaining forty-five were of average severity.

In an equally important communication appearing at the same time, RUMPF<sup>3</sup> reports the results of the treatment of thirty cases of typhoid fever with dead cultures of the bacillus pyocyaneus. Encouraged by the results of FRAENKEL, and stimulated by certain suggestions of BUCHNER,<sup>3</sup> he undertook these experiments in order to ascertain whether or not those general vital processes which, at the

<sup>1</sup> "Ueber spezifische Behandlung des Abdominaltyphus," Deutsche medicinische Wochenschrift, 1893, No. 41, p. 985.

<sup>2</sup> "Die Behandlung des Typhus abdominalis mit abgetödteten Culturen des Bacillus pyocyaneus," Deutsche medicinische Wochenschrift, 1893, No. 41, p. 987.

<sup>3</sup> "Ueber Bacteriengifte und Gegengifte," Münchener medicinische Wochenschrift, 1893, No. 24.

<sup>1</sup> "Ueber Immunität und Giftfestigung," Zeitschr. für Hygiene u. Infectiöskr., 1892, Bd. xii, p. 137.



onset of an affection, are called into play to inhibit the progress of the disease, and to protect the organism against its evil effects, could not be developed and strengthened by the introduction into the body of dead bacteria of kinds other than that setting up the infection. In his first experiments he used dead cultures of the streptococcus pyogenes, but these having no favorable effect he next prepared cultures of the bacillus pyocyaneus in thymus-bouillon, just as FRAENKEL had done with typhoid-bacilli. The action of this "pyocyaneus-bouillon" on the patients was, on the whole, quite as favorable as that observed in the cases treated by FRAENKEL with "typhoid-bouillon." The temperature-curve soon assumed a remittent type, the somnolence and delirium gave way, the functions of the skin and kidneys were restored—all without any appreciable embarrassment of the respiration or circulation.

FRAENKEL and RUMPF claim, and they have had ample opportunity for observation in the large general hospital at Hamburg, that never in their experience with different methods of treating typhoid fever have they before seen such results as were obtained in these cases. In from six to eight days the fever for the most part, and all of the severe phenomena of the disease, had disappeared. The convalescence was prompt, and, as a rule, pursued an uninterrupted course. In cases in which relapses occurred these yielded speedily on the renewal of the injections. All of FRAENKEL's cases, we think, recovered; of RUMPF's thirty cases two died—one of intestinal hemorrhage and one of pneumonia. The latter is quite conservative in the matter, being content to leave to many further trials the decision as to the ultimate value of this method of treatment, emphasizing, however, the point which he regards as the most important outcome of the investigation, viz., "that it has now been established that a disease in human beings can be influenced by products of microorganisms wholly different from those which cause the disease."

BUCHNER,<sup>1</sup> in commenting upon this work, expresses his satisfaction with the results, especially with the conclusions of RUMPF, and points out the analogy between FRAENKEL's work and the treatment of tuberculosis with tuberculin. From a bacteriologic standpoint, typhoid fever has to be looked upon as a fight of several weeks' duration between the animal organism and the typhoid-

bacilli in the intestine, mesenteric glands and other organs. On the part of the human body the war is carried on with the aid of an inflammatory (and febrile) reaction, an attempt being made, either through the activity of the leukocytes (?) or through germicidal substances newly formed in the tissues (of the nature of which we are as yet ignorant), to bring about the destruction of the invading bacilli. BUCHNER therefore views the aim of these bacterial injections which we have just described as an effort to render this "curative reaction" more intense and thus more effectual, exactly as was that of the treatment of tuberculosis with tuberculin. Here we have nothing to do with antitoxic influences, or with the production of immunity, nor have these effects (as RUMPF has pointed out) essentially anything to do with "specificity" any more than have those of the tuberculin-reaction, as was shown for the latter two years ago by the fact that it can be set up by the products of bacteria other than tubercle-bacilli. The seat of reaction is, however, determined by the localization of the lesions of the specific disease, apparently because there the tissue-elements are already in an abnormal state of excitation, and can all the more easily be aroused to a still greater activity. Very different substances are capable of calling forth the reaction. We already know that the protein-substances contained in the bodies of different kinds of bacteria can give rise to it, and it is probable that other substances which cause a leukocytosis or a local inflammation can serve the same purpose. It will be necessary, as BUCHNER says, to determine how much, if any, of the effect produced by these injections of FRAENKEL and RUMPF is directly dependent on the extract of thymus which is employed in the preparation of the bouillon, for experiment has shown that the extract exercises almost as powerful a positive chemotactic influence as do the bacterial proteins themselves.

The disastrous consequences of the general rush after tuberculin will, we feel sure, tend to dampen any undue enthusiasm concerning this new departure in the treatment of typhoid fever. We shall this time be willing to await the results of the control-experiments which will undoubtedly soon be inaugurated by investigators in large hospitals, where the preparation by competent bacteriologists of a reliable fluid for injection can be assured. Should the treatment prove to be of value, it is more than likely that, as with tuberculin, many modifications and chemical refinements will have to be worked out

<sup>1</sup> Münchener medicinische Wochenschrift, 1893, No. 43.

before it will be safe to recommend its general employment. In any case, these researches are of the widest interest, and we shall watch attentively for further developments in a similar direction.

#### PHYSICAL TRAINING VS. ATHLETICISM.

ANTHROPOMETRY and experimental psychology are comparatively new comers among the sciences. The attempt to secure relatively accurate standards of measurement for physical and mental capacities is practically a matter of the last fifteen years, but the new sciences have come to stay, and accurately observed and carefully recorded facts already at hand are sufficiently striking and comprehensive to demand the attention of all those interested in the physical and intellectual improvement of the race. Anthropometry as developed under the system known as *Bertillonage*, established by M. ALPHONSE BERTILLON, has rendered the differential diagnosis of the various physical types of defectives and delinquents as precise as that employed by the medical specialist in the various other fields of human abnormality. Workers such as WUNDT, GALTON, CATTELL, and JASTROW, have furnished us with a basis for the estimation of the departure from or approximation to the mental and nervous *norm* as easy of application and as intelligible to the trained observer as are the readings of the hydrometer, barometer, or other means for estimating relative physical states. Statistics cited by MACDONALD, in his recent essays on *Abnormal Man*, point to the conclusion that school and college education *per se* has little influence in decreasing crime, insanity, suicide, or other acts based upon perverted mental and physical states, but to the contrary, that crime, university education, and alcoholism manifest a large and corresponding increase.

PROFESSOR JOSIAH ROYCE, of Harvard, in his articles in the *Educational Review*, points out how great a region childhood is for the sprouting and first springing up of the young weeds of future mental disorder, while E. M. HARTWELL, Director of Physical Training in Johns Hopkins University, proposes the term *cachexia scholastica* for the irritable, easily over-wrought, and unsteady nervous system, arrested development and enfeebled powers of assimilation so frequently met with among our young people from ten to thirty years of age. The only inference to be drawn from the startling array

of testimony before us as to the inadequacy of mere intellectual education to avert human degeneracy, and from the direct bearing the existing system of instruction has in lowering the healthy or entrophic average, is that more attention must be paid to the building up of a race of men and women sound in body and mind, although perhaps not so precocious intellectually.

We often hear it said that this is the day of young men, and so it seems to be; but what a grotesque and absurd resemblance the average middle-class young man holds to the ideal youth! The measurements of over 15,000 young men show that the youth of London average all of three and a half inches shorter, and eighteen pounds less in weight, than the normally well developed type of the same age. The examiners for admission to West Point find a majority of the applicants unfit physically, and sometimes not one comes up to the standard of an able-bodied soldier.

We may well stop and ask those directing the education of the people what they are providing in the way of physical training toward the development of men and women whose prolonged and healthful lives shall render their increased acuteness of perception a source of personal and public comfort rather than a source of pain, premature old age, and all the evils resulting from physical depression.

The public has been deluded into accepting a false athleticism in place of scientific physical training. Only two or three of our universities have directors of physical training capable of bringing to bear the resources of the physician, the psycho-physicist, and the anthropometric expert. In the majority of instances the physical training of the student is ignored, or placed in charge of a retired sparring-master, rowing-coach, or ex-professional base-ball champion. The great mass of our boys and girls—of whom there are some fifteen millions, more or less, in actual school attendance, averaging, as BLAKIE estimates, forty pupils to each teacher in the land—these boys and girls are being practically neglected physically while being crammed mentally. In the meantime, the fact that over 60 per cent. of our population dwell in cities—an increase of 40 per cent. in the last century—shows that our stock of hardy country lads and lasses, from which to draw men of brawn and women of sound nerves, is rapidly lessening. If the tide of humanity cannot be turned out over the fields, then let us have some intelligent effort

on the part of Boards of Education and College Trustees to provide for the proper conservation of physical energy in our city children rather than the foolish encouragement of a popular fad for so-called athletics, based upon the same instinct that controls the gambler, the pugilist, and the *habitué* of the race-course. Place the physical training in the hands of scientifically qualified directors, allow the exercises to be based upon the needs of the student rather than upon the necessity of putting out a strong base-ball nine or foot-ball team. Do away with some of the present studies, and give at least half an hour a day to properly directed physical exercise. Increase the number of gymnasiums, make the fees nominal, have a personal record kept of each boy and girl, and see that the prescribed exercise is not evaded. An excellent aid in this respect consists in stitching colored worsted to the gymnasium suits over the parts requiring development, thus enabling the attendant to see that each pupil is performing only the required exercise, and inciting the pupil to a real endeavor to get rid of a mark indicating his or her weak point. Let the Directors of Physical Training hold annual conventions, to harmonize and systematize their work. The necessity of scientific physical training is a real one throughout our entire land, and physicians and parents should see to it that the young people for whose healthy development they are responsible should not be deluded and injured by the present semi-professional athleticism which has taken the place of real physical culture in most of our educational institutions, and the influence of which is felt even in the primary schools.

#### THE FIRST STATE HOSPITAL FOR EPILEPTICS.

THANKSGIVING-DAY was observed with peculiar appropriateness in the little town of Gallipolis, in the southern part of Ohio, for the day marked the opening of the State Hospital for Epileptics, the first of its kind in this country, we believe. We are aware that steps have been taken in Massachusetts, in New York, and in Pennsylvania, looking to the establishment of similar institutions, but, to the best of our knowledge, the hopes of the advocates of such a humane measure have yet to be realized. It would be difficult indeed to conceive of a greater blessing, of a nobler charity, of a truer philanthropy, than the provision of a home and, what is really more important, of healthful

and remunerative occupation for a class of the community, the members of which are not so ill as to be unable to lead useful lives, but whose unfortunate condition renders them but temporarily and periodically incapacitated for work, and who thus cannot compete with others; while at the same time they are kept under medical care and observation. In this way these unfortunates are made to yield the greatest degree of usefulness of which they are capable, while they also receive the most scientific and the most humane treatment that can be accorded them. At Gallipolis five cottages have been completed with immediate accommodations for 250 male patients. It is hoped to have four additional cottages ready in the spring, for the reception of 200 female patients. There are, besides, dining-halls, boiler-rooms, and a farm of ten acres. The cottages are two stories high, are built of sandstone, are fireproof, accommodate 50 patients, and cost about \$15,000 each. The site is an admirable one in all respects. It is expected at a future date that a second institution will be established in the northern part of the State. Common dining-rooms, except for the sick or infirm, have been provided, from economic motives. The patients will be given useful occupation to the extent that their health will permit. It is proposed to employ most of them during the summer months in truck-farming. It is estimated that the cost per capita will not exceed half that in the State hospitals for the insane. The State of Ohio has set an example that every other State in the United States should speedily follow. There can be no better way of investing public moneys.

#### EDITORIAL COMMENTS.

*The Immortal Reading-Notice.*—The extent to which the practice of the journalistic disgrace of the sneak reading-notice is carried cannot be known except by editors who look over one or two hundred different journals each week, and thus are enabled to see the same sly, shrewd, compound of lies reprinted *verbatim* as original editorial matter in scores of "medical" serials one after another. The chances are greatly against the ordinary reader, the bamboozled subscriber, or the non-subscribing receiver, knowing that this is fraudulent advice or news, and that it is appearing in many other journals in exactly the same way and in precisely the same words. He only takes one or two such local and venal periodicals, and the deception thus passes unrecognized, until some disgusted editor rails against it. Of late a particularly nauseating mess about "substitution" and the dishonest druggist is made to appear editorially in numberless medical journals, and



the whole end and aim of the rigmarole is a laudation of several proprietary and secret nostrums. Advertiser and editor are sharp enough to change the title in each periodical, but that is all the change except the bribe-money. "A Too Common Affront to the Profession," "Dishonest Druggists," "The Evils of Substitution," and other such are the hypocritical titles of the more hypocritical "ads." In a month or two a new stereotyped form will appear and run its course in the usual manner. We are thinking of making a list of these advertisers and of their slavish journals, and of putting them all in the pillory of publicity. The medical profession should know about these things. The practice is proof positive of the worthlessness of the nostrum thus advertised, the immorality of the advertiser, and the combined worthlessness and immorality of the journal thus prostituting itself.

**An Argument for Human Vivisection.**—A writer in a Western journal makes a vigorous plea that criminals condemned to death should be first used for vivisection purposes, and especially in the study of cerebral localization and function. One argument adduced is exquisitely humorous, the humor being heightened by the innocent unconsciousness of the quality. The earnest writer thus argues:

Those who would be unfavorably impressed with this method of investigation should take kindly to the information that experiments of this kind on the brain are no more unpleasant to the subject than like impressions aroused during the sojourn of perfect liberty. There is every reason to believe that the stimulus in a large number of instances would be highly pleasing. If, for example, our subject experimented upon was a person who had been repeatedly animated by the ludicrous, upon touching the seat of such impressions the whole circumstance would be reproduced, attended with the same vivacity as the original experience. Painful sensations would not be reproduced unless a certain nucleus of cells was stimulated, and this could be avoided after its exact location was ascertained. To secure coöperation and carry out the operation successfully the condemned would be instructed with the nature of the work.

The childlike conviction that "the ludicrous" and that "pain" have definitely localizable centers, and that all one would have to do in order to spend a life in laughter would be to tickle the ludicrous-center with a galvanic needle is itself one of the most painfully ludicrous conceptions of pseudo-science that we have ever met.

**Metabolic Changes following Thyroid Therapy.**—We have as yet no adequate knowledge of the processes that take place as a sequence of the administration of preparations of the thyroid gland in the treatment of myxedema. It has been observed in these cases that there occur pronounced metabolic changes, as manifested by elevation of temperature, loss of weight, and increased elimination of urine, as well as of its nitrogenous, phosphorous, and chlorinous elements. VERMEHREN (*Deutsche medizinische Wochenschrift*, 1893, No. 43, p. 1037), of Copenhagen, details the results of some interesting comparative observations, in which he found that in two of three young persons unaffected with myxedema, only increased diuresis followed thyroid treatment; while senile indi-

viduals thus treated displayed especially increased nitrogenous metabolism, elevation of temperature, acceleration of pulse, and increased diuresis, comparable to these phenomena as observed in cases of myxedema treated similarly. The inference is that the changes that take place in the myxedematous patient under the influence of thyroid administration likewise occur in old persons subjected to the same treatment. It is further pointed out that this similarity of reaction may be ascribed to changes in the thyroid gland—on the one hand a physiologic obsolescence, and on the other a pathologic atrophy.

**Public Health vs. the Law.**—In the last *Monthly Bulletin* of the State Board of Health of Iowa we notice a significant opinion from the Attorney-General in relation to the powers of the Board. It appears that the Birmingham local Board of Health condemned as unsanitary the Birmingham School-house and its site, and requested the State Board to investigate their condition. This was done by the civil engineer of the Board, and he pronounced both the building and the site unsanitary and dangerous. Nevertheless, the school-officers proposed to repair the building, and in this connection the attorney gave it as his official opinion that the State Board of Health had *not* the power to prevent this action on the part of the school-authorities.

The opinion is in these words: "The State Board of Health has not the power to make an order requiring a particular school-house to be closed because inimical to the health of children using it."

This is another instance of the absurd, technical ruling of our legal authorities, who consider that the people and their children are made for the law and the courts, and not the law and the courts for the people and their children.

**The Solar Cautery as a Remedial Agency.**—In the *Pacific Medical Journal*, Dr. A. V. Thayer writes eulogistically of the method of cauterization by means of solar heat. The *Scientific American* says that the method was first suggested by Augustus Barnes, of Southington, Conn., and was patented (we are thankful the man had no medical-title tail to his name!) by him May 28, 1867. One wonders why this method of the destruction of tissues is more agreeable than others in use, but we are assured that it is so. In sunny California the method might be applicable, but what would the surgeons in London, with months of absent sunshine, have to do and to say about it? Perhaps Dr. Thayer would advise sending the patients to California's hospitable shores! Here is a suggestion to the medical philosopher as to the influences of climate on medical and surgical progress. If a great truth, a real discovery, what a change in our office-customs! All surgeons would have to locate their offices as do the photographers, in the glass-roofed upper stories, and all hospitals would have to be much remodelled. In Chicago, with its twenty-two story buildings, this would be a "burning question" indeed.

**Bloodless Amputation at the Hip-joint.**—In view of the admirable results obtained at the hands of some twenty-five different operators from the employment of the method devised by DR. JOHN A. WYETH, of New York, for the control of hemorrhage in the performance of

amputation at the knee-joint, there would seem to be little to add to the eloquent statistics presented in the article by Dr. Wyeth that appeared in *THE NEWS* of last week. A procedure that has reduced the mortality of a given operation from 64 per cent. to 22 per cent. is surely deserving of an honorable and a permanent place in the history of practical surgery. The good results to be credited to Wyeth's method are to be found not only in the absolute saving of life in the cases in which operation is undertaken, but also in the indirect saving, in consequence of the performance of operations in cases in which otherwise a fatal result would passively be permitted to take place. American surgery has much to be proud of, and the device of Wyeth will gain it fresh laurels. The procedure must be considered a distinct advance and worthy of more general and extended application.

"*Gasocution*."—Could anything be more execrable as a word-coinage?—and yet both the word and the thing are seriously proposed. The inquiring reader may guess that the proposal is to execute criminals by gas-asphyxiation instead of by the present methods. In view of the astonishing increase of suicide, would it not be well to consider the possibility of the influence of "gasocuting" and euthanasia generally upon public morals and crime? But there is too much "gaselocution" in the proposition to be very serious about it.

## SELECTIONS.

### THE POSSIBILITIES AND USES OF ORGANIC EXTRACTS.

BETWEEN such organs as, for example, the brain and the thyroid gland, there are many and great differences. One of these differences is all-important for the present discussion. The thyroid gland is a secretory organ; the brain is not. Without entering into a discussion of the exact nature of the process, concerning which the evidence is not clear, it is sufficient to know that clinical and experimental observations are at one in demonstrating that the thyroid gland manufactures some substance which, by its function in the economy, prevents the occurrence of the symptom-complex termed myxedema or cachexia strumipriva.

The principle is exactly the same as that upon which we administer pepsin or pancreatin to replace the natural pepsin or pancreatin in digestive disorders; the body failing to furnish a certain substance which is necessary to the proper nutrition of all the organs, we supply that lack by administering a similar substance obtained from animals.

It will be observed, moreover, that whatever it may be that is accomplished by the administration of thyroid extract, it is not the cure of disease of the thyroid gland. No one, surely, expects to cure disease of the peptic glands by giving pepsin, or disease of the pancreas by giving pancreatin. Cure can only be obtained by measures which will secure natural reproduction of the missing secretions.

The brain, so far as we know, secretes nothing physical. So far as we know, there is no symptom or symptom-complex which can be attributed to defect in any

supposed secretory function of the brain. Consequently, there is nothing in the whole nosology which, on theoretic grounds, the administration of brain-extract could be expected to remedy. Similarly, the heart, so far as we know, secretes nothing, and there is no symptom or symptom-complex which can be attributed to defect of supposed secretory function on the part of the heart. Equally, therefore, there is no ground for the administration of heart-extract to remedy disorder caused by disease of that organ. For, let us remember, the thyroid extract does not cure thyroid disease, the thymus extract does not cure disease of the thymus, the pancreatic extract does not cure disease of the pancreas; and to expect brain-extract to cure brain-disease, or heart-extract to cure heart-disease, is on a par with the science of the Obi-doctor and the practice of the lizard-giving Chinamen.—DR. S. SOLIS-COHEN, in *The Polyclinic*.

### SCIENCE AND EXPERIENCE IN MEDICINE.

To the student himself I would say, Cultivate the sciences which lie at the foundation of medicine, for they are to be the key to you that will unlock the treasure-house of the future. They will give to you that sense of satisfaction that arises out of your knowing that you are in the van with progress. Not any the less thereby, but rather the more fitted will you be for professional work when you enter upon it. For this cultivation there is abundance of opportunities in your undergraduate course; and, indeed, the Medical Council has, with a wise foresight, provided that you may pass the fifth year of your course in laboratory work wholly. If, on the other hand, you neglect the sciences, you will be hampered in the appreciation of your work, and the exigencies of a practice will prevent you from overtaking the arrears of knowledge due to that neglect. You may then fully realize your mistake, when regret is of no avail to repair it.

No one, I believe, esteems more highly than I do professional attainments and skill. Nor do I deride experience, for it is not that which makes you satisfied with what has been done, but rather that which stimulates your desire to know more. Perhaps the best view of experience is that given by Tennyson in his poem, "Ulysses." The old hero, who had gone unwillingly with the Greek host, has, after ten long years before Troy and ten years of peril and adventure on the sea, returned to Ithaca, and he is represented as resolving to take up once more the life of change and discovery. I quote one familiar passage because it describes my ideal of the scientific spirit, whether it is to be found in the laboratory or at the bedside, and because it gives to the student of to-day a glimpse of the life that may be his in after-years:

"I am a part of all that I have met;  
Yet all experience is an arch wherethro'  
Gleams that untravelled world whose margin fades  
Forever and forever when I move.  
How dull it were to pause, to make an end,  
To rust unburnished, not to shine in use!  
As tho' to breathe were life! Life piled on life  
Were all too little, and of one to me  
Little remains; but every hour is saved  
From that eternal silence, something more,  
A bringer of new things; and vile it were

For some three suns to store and hoard myself,  
And this gray spirit yearning in desire  
To follow knowledge, like a sinking star,  
Beyond the utmost bound of human thought."

—PROFESSOR A. B. MACALLUM, Inaugural Lecture  
University Medical Faculty, Toronto, October 3, 1893.

**Dispensary Abuses.**—In perusing the discussion on the dispensary system, it is impossible to resist the conviction that most of the dispensaries are badly managed, that there are too many of them for the real needs of the poor, and that the gratuitous services of the physicians are not properly appreciated.—*The New York Medical Record.*

## CORRESPONDENCE.

### NEW YORK LETTER.

*Dupuytren's Contraction—Surgery of the Hand—The Coroner System—Contusion and Rupture of the Ileum—Dispensary Abuses.*

To the Editor of THE MEDICAL NEWS,

SIR: Following so close upon the many annual meetings and medical congresses, the closing months of the year are not usually marked by very great activity in medical circles. In this matter of having too many medical societies and meetings we are all agreed, just as we are united in the opinion that the large number of medical journals are more than enough for even a great country like ours; yet new medical societies and new medical periodicals spring up on every hand.

A short time ago the Wesley M. Carpenter Lecture was delivered before the Academy of Medicine by Dr. Robert Abbé. He took for his theme "The Surgery of the Hand," and dwelt at some length on the subject of Dupuytren's contraction, to which, as is well known, he has devoted considerable attention. Mr. William Adams, of England, who is also a well-known authority on this subject, holds to the gouty theory of its causation, whereas Dr. Abbé is the champion of the traumatic theory. Some time ago the latter published an article, based on twenty-five private and fifteen hospital cases, in which he propounded this theory, viz.: that a traumatism of the nerve-ends in the palm, if reflected to the central nervous system, and thence to the part originally hurt, together with a secondary series of reflex symptoms reflected to the corresponding part of the opposite hand, would perfectly account for the clinical phenomena observed. He had never met with gouty concretions in connection with Dupuytren's contraction, and he looked upon the gouty element as a pure assumption. This peculiar contraction attacks by preference the joints of the ring and little fingers, in other words, those most subject to bruises or other traumatism. To clinch the matter still further the lecturer reported a number of cases in which there was a distinct history of a traumatism bearing directly on the development of the symptoms of Dupuytren's contraction. The operative treatment for the relief of this condition is carried out very satisfactorily under cocain-anesthesia, and after the division of the tense bands the wounds are covered with "protective" and damp compresses, and the dressings

are kept moist by covering them with gutta-percha tissue. The operation should be completed within twenty minutes, as this seems to be about the length of time an Esmarch bandage can be tolerated. A firm bandage should be applied before the removal of the Esmarch bandage. The first change of dressing is made at the end of twenty-four hours, and the second on the fourth day. Dr. Abbé considers it much better to allow the parts to assume a comfortable position at first, and not be confined on a splint for the first week, rather than to immediately apply a straight splint, as recommended by Mr. Adams. The lecturer then went on to describe the peculiarities of the various other important affections of the hand, such as neuroses, tumors, "trigger-finger," "drop-finger," and the like. He said that sometimes small herniæ of the sheaths of the tendons are found buried in the palm of the hand. They resemble "weeping sinews," but cannot be dissipated by a blow. Although they occasionally disappear without treatment, such an occurrence is so rare that the surgeon should not be deterred by this from dissecting them out when they cause any trouble. He had had very gratifying results in the treatment of webbed fingers and burns of the hand by a resort to Thiersch's method of skin-grafting. In the case of webbed fingers, split the web, and dissect out any tough part; then carefully apply a long and narrow Thiersch graft up one side and down the other. In one case treated in this way the parts were perfectly healed within three weeks. In some cases of severe burns, such as are produced by the hand being caught in a hot mangle, this method of grafting enables the surgeon to restore the hand to usefulness; for these grafts do not have the same tendency to contract that ordinary scar-tissue possesses. The wonderful results sometimes obtained by replacing nearly severed members had led him to make a series of experiments on animals with a view of devising some method by which the arterial supply might possibly be restored to an amputated limb, so that the limb might be grafted back to its original or to a corresponding stump. These experiments are not yet completed, but he had succeeded in inserting a small piece of glass tube into the femoral artery of a dog and into the aorta of a cat, and at the close of the lecture these animals were exhibited.

The coroner's system has again been the subject of recent investigation, and this time, I am glad to note, the newspapers have called the attention of the general public to the abuses of the coroner's office. It is, of course, the old, old story about an antiquated system, which at the best consumes the public money and gives but little in return. Among the ignorant classes the mere mention of the coroner inspires a feeling of awe and dread, and to those who are better informed as to the duties of the coroner and the value of his services he is still an "awful" person. I do not mean to say that the present coroners are individually any worse than their predecessors, but what is to be expected of a system which is chiefly political, and in which the important work of the deputy coroner is usually let out to the lowest bidder? It is well known that many of the inquests are nothing but farces, and the community is to be congratulated if the "viewing of the body" actually takes place—even from a distance—for it is sometimes only a mental process—a creature of the imagination.



The writer well remembers certain experiences of this kind which he had during his hospital days. For example, a patient who had sustained a dislocation of the knee developed delirium tremens soon after his admission to the hospital, and although appearing one morning in every way better than he had done the previous night, he was found dead only a few minutes after the house-surgeon had left the ward. We were entirely at a loss to account for his death, and the deputy coroner, after trying in vain to elicit some information from me which would give him at least a slender basis of fact on which to make out the certificate of death, admitted frankly that he had no idea what caused the patient's death. Yet in the face of this confession he positively refused to make a post-mortem examination. The attending surgeon, after arguing the matter with the deputy coroner, finally remarked, with indignation: "Well, all that we can do with you fellows is to remember you on election day." This was certainly a truly American way of disposing of the matter, and I sincerely hope the coroner's system in New York will be disposed of in the same way at the Constitutional Convention; but I am constrained to add that in this particular instance the coroner must have been forgotten on election day by the better part of our citizens, for it is not necessary to go back very far in history to learn that he was appointed afterward to a very important and responsible medical position. At another time I remember receiving a document from one of our well-known coroners, ordering me to deliver up the body of a man who had died in the hospital from a fracture of the skull. Although he had received this injury from a collision of a horse-car with his wagon, and there was every probability of there being a suit for damages, the coroner stated in this paper that *he had viewed the body*, and had duly held an inquest in his office before such and such witnesses, and that as a result of this investigation he had come to the conclusion that the person had met his death from fracture of the skull. All this was certified to in spite of the fact that no representative of the coroner's office had appeared at the hospital to make any inquiries there in regard to the deceased, or had viewed the body—even through a telescope.

I have not touched upon the evils or the follies of the coroner's jury, but the foregoing cases, affecting as they do two very prominent representatives of the coroner's office, who have "served the public" (?) for many years, are sufficient to show that, even supposing the system to be a good one—which it is not—its administration in New York City is very bad.

Before leaving this subject, the writer cannot refrain from alluding to the case of the late Colonel Elliott F. Shepard, who died so unexpectedly after etherization. Here there was a grand opportunity for the coroner to do yeoman service to the public by making a post-mortem examination and determining the real cause of death, and so reestablish the public confidence in ether as an anesthetic; but the coroner, in his superior wisdom, decided that such an examination was not necessary. As a result, a sort of panic seemed to seize the people, and it was very difficult for a time to induce persons to consent to be etherized. This case has been discussed again and again in our medical societies, but all the arguments on this subject lack the force and precision which they would

have if a careful post-mortem examination had been made.

At the last meeting of the Society of the Alumni of Bellevue Hospital, the president, Dr. Frederick Holme Wiggin, reported a case which, although chiefly surgical, carries an important lesson for the general physician to bear in mind. The case was one of contusion and rupture of the ileum, with peritonitis, yet without any external wound to indicate to the physician the grave nature of the internal injury. The patient was a colored boy, fifteen years of age, who had been kicked by a horse in the right lumbar region. He vomited a little blood after the accident, and complained of continuous nausea, and when seen some hours later, although suffering slightly from shock, and having an anxious expression, his pulse was 80, and his temperature normal. Owing to a misunderstanding, Dr. Wiggin did not see the patient again until the next evening, when the signs of peritonitis were quite evident. He at once performed celiotomy, followed by enterectomy and circular enterorrhaphy by Maunsell's method. A knuckle of the ileum near the jejunum looked as if it might become gangrenous, and although no perforation could be discovered prior to its removal, this portion of the intestine was resected. The operation was eminently successful, and the patient was shown to the Society. In reporting the case, the author called attention to the fact that he had poured a quantity of a fifteen-volume solution of hydrogen dioxid into the peritoneal cavity, and had allowed it to remain there for a short time, in order to completely disinfect this cavity after the accidental escape of some of the contents of the bowel. The resulting foam was then washed away and the cavity flushed with hot sterilized salt solution (0.6 per cent.) and the abdominal wound closed, leaving the peritoneal cavity full of the salt solution. The object of this was "to lessen shock, to prevent adhesions, to aid in the readjustment of the intestines and omentum to their proper position, and to lessen the danger of septic peritonitis."

In the discussion of this paper, the general opinion among the surgeons seemed to be that Maunsell's method of operating on the intestine was a great step in advance, as it greatly simplified and shortened the operation. Dr. Robert A. Murray called special attention to the fact that many cases end fatally because the profession at large believes that if peritonitis is present, there must be an elevation of temperature and an acceleration of pulse and respiration. This was a very grave mistake; the peritonitis might even be ushered in by a decided fall in the temperature. The peculiar facial expression and the smallness of the pulse were the most important guides in the diagnosis of these cases.

Several other speakers took the same ground, and urged very strongly that the general practitioner should be made acquainted with these facts, as it was he who would ordinarily be called upon to see such cases at a time when operation held out a fair prospect of success. Dr. Matthew D. Field emphasized, by narrating a case, the importance of being on the alert for injury of the intestine or other viscera in cases of traumatism, even when there are no external marks of violence. A man was hurt on the elevated railroad by a "buffer accident," but was able without assistance to walk several blocks, and reach his home, which was several miles distant. He

had no serious symptoms for three days, when he suddenly developed stercoraceous vomiting. After a hasty consultation, the physicians who had been summoned made a diagnosis of intussusception, and proceeded to give him a high enema, whereupon the patient went into collapse and died. The speaker was present at the autopsy, and it was then found that the mesentery had been torn away for nearly half an inch, and that gangrene had resulted in nearly two feet of intestine. The intestine had also been wounded in three other places, but all of these wounds had healed, and the man would have recovered had it not been for the gangrene which followed the tearing of the mesentery. The injection had caused a rupture of one of the wounds in the intestine.

I have so often written about the dispensaries and their abuses that I would not venture to say any more were it not that this is a matter of more than local interest. The latest public ventilation of this topic occurred a few weeks ago at a meeting of the Section on Public Health of the Academy of Medicine. The discussion was opened by Mr. Charles C. Savage, President of the Demilt Dispensary, and Trustee of the Roosevelt Dispensary, who read a paper entitled "Dispensaries, Historically and Locally Considered." The author seemed to think that because free music in the parks and free libraries and free baths did not demoralize the recipients, free medical treatment ought not to be harmful, and an experience of forty years had led him to feel quite sure that dispensary work was the least harmful of the ordinary charities. In closing, he made the astounding statement that the dispensaries having physicians on their boards of managers were among the worst in the city. In the discussion, Dr. H. D. Chapin said the work done in the dispensaries was worthless, from a scientific standpoint. He insisted that those who treat the sick in the dispensaries should have the management of these institutions. Dr. F. W. Jackson firmly believed that good scientific work could be done in dispensaries, and said that the doctor outside had no right to object to the dispensaries, for he had not the energy to get in them. Dr. Joseph Collins saw no more reason for physicians giving their services without compensation than for ministers or lawyers giving theirs. He thought the condition of the medical profession here at present might be aptly compared to that of the American colonists, who suffered from taxation without representation. Among those who also participated in this discussion was a Mr. Cook, a layman, who seemed to think that the more the public could get out of the doctors, or, in fact, out of almost anybody, without paying for it, the better. He said that he had never observed any of the demoralization which some claimed was the result of our dispensaries as at present conducted, but he did know of thousands of people who had been pauperized by doctors.

If this discussion is fairly representative of the present state of public opinion on this subject, this vexed question is evidently far from a satisfactory and proper settlement.

*The Biography of Dr. Ephraim McDowell*, by his granddaughter, Mrs. Valentine, formerly Mrs. Ridenbaugh, will be furnished to subscribers—we are informed by Mrs. Valentine—so soon as the new edition can be published.

## NEWS ITEMS.

### *Sanitary and Medical Service on Board of Emigrant Ships.*

—The report of the Committee of the American Public Health Association "On Sanitary and Medical Service on Board of Emigrant Ships" was presented by Medical Director Albert L. Gihon, U.S.N., Chairman, at the session of the twenty-first annual meeting of the Association, held at the Art Institute, Chicago, Ill., Wednesday, October 11, 1893, as follows:

Your Committee beg to report the following concise statement of their views as to the organization of such a sanitary and medical service on board vessels engaged in bringing immigrant passengers to the United States, as the experience and intelligence of this age make a necessity among civilized and enlightened nations.

They are of opinion and advise:

*First.* As to the location and dimensions of the quarters for emigrant passengers, the number of berths in each, and the provisions for their ventilation and cleansing:

That the preferable location for such quarters is abaft the midship section of the vessel; that single males' quarters shall be distinct from those occupied by women and children, and that if any are forward the midship section, it shall be those for single men;

That there shall never be more than two decks (properly there should be only one) occupied by emigrant passengers' berths, with sixteen feet of superficial space for each adult on the upper berth-deck and twenty feet of such space on the lower berth-deck, with not more than two tiers of berths on each deck, the bottom of the lower tier being not less than eighteen inches above the deck, with not less than thirty inches between the two tiers and between the upper tier and the ceiling of the compartment to allow the occupants of the berths to sit upright;

That no solid partitions or bulkheads shall be placed in any steerage compartment to obstruct light and air;

That the framework of the berths shall be of iron easily removable, that the compartment may be completely emptied and thoroughly cleaned after each passage;

That a steam ventilating apparatus by aspiration shall be introduced into all emigrant vessels; and

That all compartments occupied by passengers and crew shall be lighted by the incandescent electric light by night and day.

*Second.* As to the location and dimensions of hospitals on board such vessels and the number of sick-berths for which provision should be made:

That the hospitals, or "sick-bays," on board emigrant passenger vessels shall be at the extreme after-part of the upper deck, thoroughly lighted and ventilated, with eighteen feet of superficial space for every fifty passengers, and not less than four sick-berths or hospital-cots for every hundred passengers.

*Third.* As to the number of medical officers proper for the maximum of emigrant passengers any vessel should be permitted to carry, being the maximum number able to be berthed with regard to health, cleanliness, and comfort:

That there should be one duly qualified medical officer for every two hundred and fifty passengers.

*Fourth.* As to the professional records which the senior medical officer of every such vessel should be required to keep and his responsibility to the health-authorities of the port of arrival for the truthful and professionally accurate statements of such records:

That the senior medical officer of every such vessel shall be required to keep (1) *a list of sick*, recording in a bound book, in the order of their admission, and on a single line, the name, sex, age, birth-place, date of admission to treatment, date of death or discharge from treatment, disease, and such remarks as may be necessary to enable the inspecting medical officer at the port of arrival to have a clear and complete understanding of the case; and (2) *a medical journal*, in which each medical officer, when there are more than one, shall record the medical history, including the symptoms and treatment of every case, to be approved and signed by the senior medical officer at the close of the day's record; and such list of sick and medical journal shall be submitted to the health-authorities of the port of arrival, and the accuracy of the statements in such records shall be established by oath, and penalties for perjury shall be provided.

*Fifth.* As to the location and capacity of latrines for emigrant passengers:

That the latrines, shallow troughs with a continuous flow of salt water, shall be on the upper deck under shelter, with two water-closet seats for every fifty passengers, with a proportionate number for women and children, in a separate locality near their own quarters and inaccessible to men.

*Sixth.* As to the number of attendants provided for such passengers, and their duties as to policing and cleansing emigrants' quarters:

That there shall be not less than one berth-deck attendant for every fifty passengers; female attendants in the same proportion being exclusively assigned to the quarters for women and children;

That the berth-decks shall be thoroughly cleansed every morning by the attendants; never wetted in rainy or damp weather, when they shall be scraped, swept, and freshly sanded, and in pleasant weather washed with hot water and quickly dried, the passengers being sent on deck during the operation;

That the berth-deck attendants shall be on duty night and day in rotation, by regular sea-watches, and the attendants on watch be required to remove the dejecta of sea-sick passengers without delay; and

That benches and mess-tables shall be provided and the passengers' food be distributed by the berth-deck attendants, who shall take away all unused food, and carry the dishes to the pantry.

*Seventh.* As to additional provisions for the personal health, cleanliness, and comfort of emigrant passengers:

That wash-rooms under cover, with basins supplied with running water, shall be provided on the upper deck, those for men to be separate from those intended for women and children;

That fresh water for drinking purposes shall be provided in each compartment; and

That inexpensive mattresses, pillows, these to be serviceable as life-preservers, and blankets shall be provided for emigrant passengers, the mattresses to be destroyed after each passage, and the pillows and blankets to be steamed and washed before being again used.

While other suggestions as to sanitary provisions might appropriately be made, your Committee feel that these indicated are of such urgent necessity that they should be insisted upon and put into effect without delay.

All which is respectfully submitted:

ALBERT L. GIHON,

*Medical Director U. S. Navy, Chairman.*

FREDERICK MONTIZAMBERT, M.D., F.R.C.S., D.C.L.,

*Supt. Quarantine Station, Grosse Isle, Quebec.*

WALTER WYMAN,

*Supervising Surgeon-General U. S. M. H. S.*

S. R. OLLIPHANT, M.D.,

*President State Board of Health of Louisiana.*

WM. T. JENKINS, M.D.,

*Health Officer of the Port of New York.*

*The Pennsylvania State Medical Society* will hold its next meeting at Gettysburg, May 15, 16, 17, and 18, 1894. Those desirous of presenting papers are requested to notify, at an early date, the Chairman or any other member of the Committee of Arrangements. Dr. E. E. Montgomery, of Philadelphia, is the Chairman, and the other members of the Committee are: Dr. Isaac C. Gable, of York; Dr. George S. Hull, of Chambersburg; Dr. John C. Davis, of Carlisle; Dr. Henry Stewart, of Gettysburg; Dr. George Rice, of McSherrystown; Dr. E. W. Cashman, of York Springs.

*Dr. William Hunt* has resigned as one of the visiting surgeons of the Pennsylvania Hospital, and Dr. Richard H. Harte has been elected to fill the vacancy. The Board of Directors of the Hospital has passed a minute expressive of its appreciation of the work of Dr. Hunt, covering a period of thirty years as Attending Surgeon, and of more than forty-three years in various relations with the Hospital.

*The Tri-state Medical Journal* is the name of a new monthly publication emanating from Keokuk and under the editorial care of Dr. James Moores Ball. Though *Tri-state* in name, it proposes to be unlimited in territory, and promises to be a journal preëminently for young men. It dedicates itself to higher medical education and the advancement of scientific medicine.

*The Next Meeting of the American Medical Association* will be held at San Francisco, on the first Tuesday in June, 1894, instead of on the first Tuesday in May, in order to permit of a discussion of the Code by the various State Societies that meet just before the meeting of the national Association.

*Foot-ball Fatality.*—A youth, aged eighteen years, of Normanby, near Middlesborough, has died from injuries sustained on the 11th inst., during a match between Normanby and the Acklem Swifts.—*Lancet*, Nov. 25th.

*Dr. Charles Warrington Earle*, President of the Chicago Medical Society and one of the founders of the Chicago College of Physicians and Surgeons, died on November 19th, of meningitis.

*Correction.*—In the first line of the first column of page 478 of *THE NEWS* of October 28th the dose of trinitrin should have been given as gr.  $\frac{3}{8}$  and not as gr.  $\frac{1}{8}$ .